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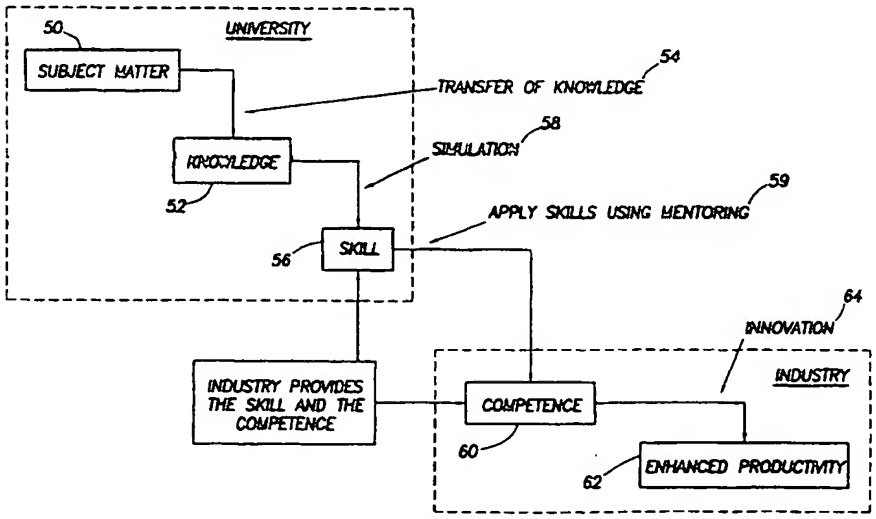
(54) Title: TRAINING METHOD USING INDUSTRY AND UNIVERSITY COLLABORATION



(57) Abstract: A new training method is disclosed which is referred to as "NExT", an acronym for "a Network of excellence in Training". The "Next" new training method is designed to train and educate students/potential engineers attending a university (30) and newly employed engineers in industry (32). The universities (30) and industries (32) will collaborate together for the purpose of constructing courses, to be presented at the university (30), that are designed to add "simulation-acquired" skills (56) to basic subject matter knowledge (52) and, at an industrial location, to add competence to the newly acquired skills (56). In addition, industry (32) and the universities (30) also collaborate together for the additional purpose of providing a "quality assurance program" at the university level, where: the courses taught at the university (30) and the instructors that present/teach these courses at the university (30), are periodically audited by a Peer Review Board (15f). An Industrial Advisory Board (15g) ensures that all the newly constructed courses that are stored in the "NExT" Curriculum Library (94) continue to meet the needs of industry (32).

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TRAINING METHOD USING INDUSTRY AND UNIVERSITY COLLABORATION

BACKGROUND OF THE INVENTION

The subject matter of the present invention relates to a method of providing university training which utilizes a collaboration by industry and the universities to provide training for university students and professional engineers employed by industry while simultaneously utilizing a quality assurance program to continuously maintain, among other things, the quality of the courses taught at the universities and the instructors which teach those courses. More particularly, the subject matter of the present invention involves a method of training which utilizes 'collaboration' by industry and the universities to raise the academic standards of training available in industry and to incorporate real-life industrial experiences into the content of courses taught at colleges and universities thereby allowing college and university students to graduate with a multitude of industrial skills in addition to a multitude of academic knowledge. The method of training further includes an on-going 'quality assurance program' to ensure that the novel method of training of this invention will continue to provide high-quality training courses and high-quality instructors for teaching those courses.

Changes in the oil industry have created a need for changes in methods of training students attending colleges and universities. As a result of consolidations between two or more companies, the resultant merged companies are often reorganized with a small corporate headquarters and a plurality of efficiently operating 'asset teams'. Each of these 'asset teams' consist of a small decentralized group of individuals who manage the operations of the merged companies in smaller components.

Many large companies are redefining their strategic visions, reevaluating their core competencies and restructuring their business operations. At one time, there existed large corporate structures which centrally supported operations. However, today, these central corporate organizations are small, the small central corporate organizations utilizing a plurality of operating teams that are formed for the purpose of managing the corporate assets at various locations around the world. The corporate management focuses on strategic portfolio management of these corporate assets and the corresponding return on investment of these assets. The 'asset teams' are empowered to operate the asset, these 'asset teams' making the day-to-day decisions which are necessary to increase the productivity of the asset in the most effective and efficient manner possible. From an engineering perspective, the 'asset teams' are faced with an ever increasing need for high tech solutions to meet the demanding complex environments in which they work. Because of the complexity of the technology needed today, most companies can not afford to support the research and development needed to continue to advance these competencies in-house. In fact, most of these technologies are being outsourced to the service sector where they are supported as core competencies. The result is a need for collaboration between the team operating an asset and the technical solution providers who hold the keys to efficient exploitation of the reserves.

Since fast paced changes in technology are creating an industry trend, this industry trend creates a tremendous challenge for companies [especially, Exploration and Production (E&P) companies] to maintain a competent workforce. Companies cannot create most of the upstream technology they need for modern operations. Corporate training departments are becoming smaller and more focused on supporting the defined core competencies. Managers of business units, which are operating the assets, are still responsible for their results and therefore such managers need to have team members in their employ that are technically competent and able to make effective contributions. Another important factor is that the business units are small efficient teams which makes it difficult to send key personnel away for extended periods of training. The training investment made by an 'asset team' must be relevant to its operations and that training investment must have an immediate impact on the

team operations. The impact this has on a newly graduated engineer from a university entering this environment means that the engineer is expected to arrive equipped with a skill set that will make an early contribution to the team's effectiveness.

In addition, because of complex technology and complex working environments, the merged companies must often outsource needed skills since these skills are not obtainable in-house. As a result, the competency of those skills in these companies are beginning to decline because those skills are often obtained by the aforementioned outsourcing to the service sector where they are supported as core competencies. Furthermore, the 'asset teams' of these companies are being used for locating replacement reservoir fields in lieu of operating older reservoir fields which are being depleted of their oil and gas reserves. As a result, the operation of such older reservoir fields are being outsourced. As a further result of the outsourcing of the older reservoir fields, the engineering staffs of these companies are being reduced. Consequently, these companies are retaining smaller staffs focused on the location of replacement reserves. All of the above mentioned factors have an effect on training because the available skills being retained in-house by these companies is declining. Finally, as a result of the above referenced consolidations, the demographics of these companies is changing. That is, because of the consolidations, early retirement packages are being offered the more experienced personnel of these companies, and those more experienced personnel are electing to take the early retirement packages. As a result, a source of "mentoring", which was provided by the more experienced personnel of these companies, is diminished. This problem is further exacerbated by the fact that the remaining persons which comprise the "asset teams" do not have, within their performance incentives, the responsibility for helping to mentor and develop the younger, less experienced employees. Furthermore, recalling the older reservoir fields that are now being outsourced, these older reservoir fields previously provided a low risk environment for training younger employees which would allow the younger employees to acquire the experience and practice the skills necessary to become a competent employee. However, these older reservoir fields are being outsourced. As a result, the younger employees, albeit very bright, do not have the experience and the skills necessary to become a competent employee. These younger

employees, straight-out from the university, are placed in the high-risk end of the business (e.g, in the exploration fields) with the expectation that they will perform jobs that they are not competent to perform. At one time, these companies would send the younger employees away, to in-house training facilities and universities, to be further trained. However, with the advent of these "asset teams", since these asset teams consist of small numbers of individuals, the asset teams simply cannot afford to send their members away to be trained. The aforementioned 'adverse conditions' impacted the training requirements of these companies.

In the prior art 'older training method', when a student graduated from a university and became employed by a company, the company would train that person in-house. However, the aforementioned 'adverse conditions' did not exist in the past, and, as a consequence, the aforementioned 'older training method' was adequate, at that time, for training new employees. On the other hand, the aforementioned 'adverse conditions' which exist today do impact the training of personnel employed by these companies.

These trends in modern industry today require changes in the manner or method by which an engineer/employee is trained prior to the engineer's employment in that industry. The present invention (hereinafter called "NExT" , which is an acronym for a "Network of Excellence in Training") is designed to meet the training needs of modern industry by utilizing the concept of "collaboration" between partners and by combining intellectual capital with flexible delivery methods in a "training value model" that is unique in the training industry today.

Accordingly, there is a need to improve upon the 'older training method' of the prior art by providing and implementing a 'new training method' which allows industry to collaborate with the universities for the purpose of adding skills and competence to the knowledge taught to students attending the universities. In addition, there is a further need to implement a 'new training method' which further includes a 'quality assurance program' which will ensure that the quality of the training and the quality of teachers/professors involved in such training remain above acceptable high levels.

As a result, the students attending the universities will graduate from the universities with skills and competence in addition to knowledge which will enable them to adapt more easily to the conditions which exist in industry today. In addition, students that graduate from the universities in the future will also graduate with skills and competence in addition to knowledge because the on-going 'quality assurance program' being implemented at the universities will continue to guarantee that the quality of any future courses and the quality of any future teachers that teach the courses will continue to remain above acceptably high levels.

SUMMARY OF THE INVENTION

Accordingly, it is a primary object of the present invention to provide an organized training system, managed by a collaboration of industry and the universities, for teaching students attending the university and employees employed by industry the latest technology and to ensure that the universities will continue to teach the latest technology by way of a quality assurance program.

It is a primary feature of the present invention to provide a 'new training method', hereinafter called the "NExT" new training method, which teaches students attending the universities and employed by industry both simulation acquired skills and competence in addition to knowledge and which also includes a 'quality assurance program'.

It is a further feature of the new training method of the present invention to provide a training system that involves at least two concepts: (1) universities and industry will 'collaborate' together for the purpose of teaching students attending the universities and engineers in industry both skills and competence in addition to knowledge, and (2) a 'quality assurance program' wherein the quality of future courses taught at the universities and the quality of future teachers involved in teaching such future courses at the universities will continue to remain above acceptably high levels.

It is a further feature of the new training method of the present invention to introduce the aforementioned concept of 'collaboration' between industry and the universities wherein, when the engineers and the students are taught both the subject matter knowledge and the industrial skills: (1) the subject matter is transferred into knowledge at the university location through normal course study, (2) the knowledge is transferred into skills at the university location through simulation scenarios provided by industry, where the simulation scenarios teach the students real-life industrial applications, and (3) the skills are transferred into competence at an industrial location, the transfer of skills into competence occurring by using a 'mentor' and by experiencing and utilizing the practical application of their acquired skills.

It is a further feature of the new training method of the present invention to transfer the competence attained by the new engineers in step (3) above into enhanced productivity at the industrial location through innovation.

It is a further feature of the new training method of the present invention to transfer the knowledge into skills in step (2) above through simulation wherein, during the simulation, the latest technology is taught to the students attending the university and 'appropriate delivery methods' are utilized, the appropriate delivery methods including: (a) on-line learning, (b) classroom learning, and (c) simulation wherein, during the simulation, which is taking place at the university location, the university students will utilize a 'controlled simulation' of actual real-life industrial experiences.

It is a further feature of the new training method of the present invention to transfer the student's skills into competence in step (3) above, through innovation and mentoring taught to the students at an industrial location, wherein the students will utilize software programs that a client may want to use and datasets that a client may want to provide thereby enabling the transfer of the university student's skills into competence and allowing the university students to solve real-life business problems for their asset team.

It is a further feature of the new training method of the present invention to transfer the university student's knowledge into skills in step (2) above and to transfer the university student's skills into competence in step (3) above by providing a learning environment at the university student's new industrial location, the step of providing the learning environment including the step of providing a mentoring process wherein the former university student (hereinafter, new employee) will interface with both a supervisor and a mentor, the mentor accompanying the new employee to other courses offered at the industrial location and the supervisor interfacing with the new employee after the course work is completed.

It is a further feature of the new training method of the present invention to provide a training system that involves the use of the "Training Value Model" (refer to figure 10b). The "Training Value Model" method of training in accordance with the present invention will meet the needs of Industry for two reasons: (1) the "Training Value Model" utilizes the concept of 'collaboration' between industry and the universities (hereinafter called "the "NExT" partners) for teaching students attending the universities and engineers/new employees employed by industry both skills and competence in addition to knowledge, and (2) the "Training Value Model" includes an on-going 'quality assurance program' for ensuring that the quality of any future courses taught at the universities and the quality of the teachers that teach those courses at the universities will continue to remain at acceptably high levels.

It is a further feature of the new training method of the present invention to provide a training system that involves the concept of 'collaboration' between industry and universities, wherein the engineers in industry and the students attending the universities are taught subject matter knowledge and practical real-life industrial skills. However, in addition, the courses being taught at the universities and the teachers/professors teaching the courses must both undergo a periodic 'quality assurance' evaluation by a Peer Review Board. The Peer Review Board is composed of a combination of industry and university personnel. More particularly, the courses being taught at the universities are periodically audited by the Peer Review Board. In addition, the subject matter knowledge, delivery method, and overall presentation of

each teacher that teaches a course at the university is periodically evaluated by the Peer Review Board for the purpose of maintaining the quality of the courses as well as the quality of the teachers that teach the courses. In addition, an Industrial Advisory Board will monitor the quality of the courses stored in the "Next Curriculum Library" to ensure that these courses meet the needs of industry.

It is a further feature of the present invention to provide a new training method which includes the steps of: (1) booking a training class by a client, where this booking step includes the steps of (1a) contacting by the client a business development manager (BDM) of industry, (1b) referring the client by the BDM to an appropriate business segment of industry if the client's training need relates to a proprietary service or product, (1c) determining by the BDM if a course which satisfies the client's training needs resides in a curriculum library when the client's training need does not relate to the proprietary service or product, (1d) developing and producing the course if the course does not reside in the curriculum library, and (1e) utilizing the course if the course does reside in the curriculum library.

It is a further feature of the present invention to provide a new training method which includes the steps of: responsive to the developing step (1d) which develops the new course if the new course does not reside in the curriculum library, allowing industry to provide an input to the developing step (1d) thereby enabling industry to provide subject matter expertise, instructional design, graphic artists, programmers, or quality assurance to the developing step.

It is a further feature of the present invention to provide a new training method which includes the steps of: (2) booking the training class by the client, this booking step including the steps of: (2a) booking by the client an 'individual course' by utilizing a website or an e-mail, (2b) determining if the 'individual course' is a classroom delivery type of course or a distance learning type of course, (2c) determining if the 'individual course' for both the classroom delivery type or the distance learning type are accredited or not accredited, (2d) screening a prospective applicant if the 'individual course' is accredited, (2e) not screening the applicant if the 'individual

course' is not accredited, (2f) dispatching the coursework to the client if the 'individual course' is the distance learning type, and (2g) reserving a place in a classroom if the 'individual course' is the classroom delivery type.

It is a further feature of the present invention to provide a new training method which includes the steps of: (3) booking the training class by the client, this booking step including the steps of: (3a) booking by the client a 'closed course complete class' which is not a public offering, (3b) determining by an Administration manager whether the 'closed course complete class' is a classroom delivery type of closed course or a distance learning type of closed course, (3c) if the closed course is a classroom delivery type, determining if the closed course is an accredited course or an unaccredited (non-credit) course, and reserving a place for the new 'closed course complete class' when the closed course is either accredited or unaccredited, and (3d) if the closed course is either a classroom delivery type or a distance learning type, determining if the closed course exists in the curriculum library and assembling a Course Production Team to develop and produce the closed course when the closed course does not exist in the curriculum library.

In accordance with the above object and features of the present invention, a new training method is disclosed which is referred to as "NExT", an acronym for "a Network of Excellence in Training". The "NExT" new training method is designed to train and educate students/potential engineers attending a university and newly employed engineers in industry. The universities and industry will collaborate together for the purpose of constructing courses, to be presented at the university and to be presented at an industrial location, that are designed to add 'simulation-acquired' skills to basic subject matter knowledge and to add competence to the newly acquired skills. Industry provides real-life industrial simulation scenarios to the universities to allow a student to acquire real-life industrial skills representative of actual real-life industrial experiences in addition to subject matter knowledge acquired by normal course study. In addition, newly employed engineers at an industrial location acquire a measure of competence through mentoring and the practical application of their acquired skills, and they acquire enhanced productivity at the

industrial location through innovation. In addition, industry and the universities also collaborate together for the additional purpose of providing a 'quality assurance program' at the university level.

During the 'quality assurance program, which is continuously operating, a "Peer Review Board" and an "Industrial Advisory Board" are utilized. The Peer Review Board will ensure that the quality of the courses being continuously taught at the universities in addition to the quality of the teachers that teach those courses are continuously maintained at an acceptably high level. The Peer Review Board will periodically audit the courses being taught at the universities and it will periodically evaluate the teachers that teach those courses during the audit. The Industrial Advisory Board will ensure that the courses being taught at the universities, as well as the courses taught in industry, meet the needs of industry by continuously supervising/evaluating the courses that are stored in the "NExT Curriculum Library" (see numeral 94 in figure 20).

The "NExT" new training method in accordance with the present invention is illustrated and represented by a Training Value Model illustrated in figure 10b. The Training Value Model includes a plurality of progressive training levels. The plurality of progressive training levels of the Training Value Model include: technical subject matter development, subject matter to knowledge transfer, knowledge to skills development, skills to competence assurance development, certification accreditation, and a quality assurance program for ensuring that the quality of the courses and the quality of the presenters at the partner universities will always surpass a minimum acceptable level. The quality assurance program includes the Peer Review Board and the Industry Advisory Board.

The "NExT" new training method of the present invention includes the following steps. A client approaches training vendor for the purpose of booking a training course for its employees. That client can book a course that is stored in the training vendor's curriculum library, that course being either an accredited course or a non-credit course. In addition, that client can have a special course specifically developed

for its training needs which is subsequently stored in the curriculum library, and that client can then book that special course. In that case, a 'Course Production Team' will specifically develop that special course for the client. The special course can be an accredited course or a non-credit course. Alternatively, that client can book an individual course by using the training vendor's website or by sending an e-mail message to the training vendor. That individual course can be a 'classroom delivery' type of course or a 'distance learning' type of course, and that individual course can be for credit or for non-credit. Alternatively, that client can book a 'closed course complete class' which is a course that is not publicly offered by the training vendor. The closed course can be a classroom delivery type of course or a distance learning type of course, and the closed course can be either an accredited course or a non-credit course. If the closed course is not in the curriculum library, the aforementioned 'Course Production Team' will specifically develop that closed course for the client's training needs, and the closed course is later stored in the curriculum library. Whenever the Course Production Team specifically develops a course for the client's training needs, that course is designed such that, when students attend the newly developed course, subject matter is transferred into knowledge through normal course study and knowledge is transferred into real-life industrial skills through the use of simulation scenarios/programs provided to the university by industry. The newly developed course must undergo an evaluation or 'quality assurance' audit by a Peer Review Board. Those newly developed courses, which successfully pass a set of rigid requirements set forth by the Peer Review Board, are stored in the "NExT" curriculum library. In addition, potential instructors of these courses must also undergo and successfully pass the 'quality assurance' audit by the Peer Review Board. Those potential instructors which pass the 'quality assurance audit' by the Peer Review Board are placed on the 'approved instructor' list. An Industrial Advisory Board monitors the courses stored in the "NExT" curriculum library to ensure that the stored courses continue to meet the needs of industry.

Alternatively, when a Business Development Manager receives a client training request, a Program Director (PD) is notified, the PD conducting a 'course feasibility analysis' by contacting the appropriate Director of Curriculum. The Director of

Curriculum determines if the course resides in the curriculum library. If not, the Director of Curriculum advises the Program Director who contacts the client to determine whether or not to proceed. If yes, the Business Development Manager determines pricing. The Program Director also contacts the Peer Review Board (PRB) to conduct an instructor certification process. Here, the Director of Curriculum requests the names of candidates for instructors and sends the names to the PRB. The PRB audits each candidate. If the candidate meets criteria, the candidate is put on an 'approved instructors list'. If not, an attempt is made to develop the candidate's skills.

When the Course Production Team (CPT) develops a course specifically for the client's training needs, the CPT must first perform a process known as 'coursework planning and development', and then the Peer Review Board (PRB) must conduct a process known as the 'coursework audit acceptance process'. The CPT ensures that the new course is economically feasible and it develops a new course and produces a prototype 'newly developed course'. The PRB must either accept or reject the newly developed course. If it accepts the newly developed course, the PRB runs an alpha test on the course and sends the results of the alpha test back to the Director of Curriculum. The Director of Curriculum convenes the PRB to audit the results of the alpha test. If no further changes to the newly developed course are required, the newly developed course is stored in the curriculum library and it is published in a sales catalog. The Business Development Manager contacts the client to determine if the newly developed course is an appropriate course for "NExT". If yes, the Program Director is advised. The Program Director conducts a course feasibility analysis. The Program Director contacts the Director of Curriculum to determine if the newly developed course is deliverable (i.e, acceptable for the client's needs). If yes, since the newly developed course is deliverable, the Business Development Manager must now determine the pricing for the newly developed course. The 'course type' must be determined, that is, is the newly developed course a 'classroom delivery' course or a 'distance learning' course, and is the newly developed course 'viable'? If the newly developed course is viable, it is stored in the "NExT" curriculum library as either a classroom delivery or distance learning type of course. If the newly developed course

is a 'classroom delivery' type of course delivery method, the Peer Review Board (PRB) must perform the 'instructor certification process' to determine if the instructors meet established criteria. The Program Director looks at the venue for the course and whether it is for credit (accredited) or for non-credit. If for non-credit, the Next Administration Manager must determine if the course is a 'go' or a 'no go'. If for credit, the Director of Curriculum screens the applicant and, if the applicant is acceptable, the Director of Curriculum registers the student for the class.

Further scope of applicability of the present invention will become apparent from the detailed description presented hereinafter. It should be understood, however, that the detailed description and the specific examples, while representing a preferred embodiment of the present invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become obvious to one skilled in the art from a reading of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

A full understanding of the present invention will be obtained from the detailed description of the preferred embodiment presented hereinbelow, and the accompanying drawings, which are given by way of illustration only and are not intended to be limitative of the present invention, and wherein:

figures 1 through 16 are utilized in connection with the Description of the Preferred Embodiment, figures 1 through 16 illustrating the following features:

figure 1 illustrates one prior art method of training wherein industry trains the graduating students 'in-house', at the industrial location, to add skills to their knowledge;

figure 2 illustrates another prior art method of training wherein the universities had sole input/contribution over the content of the university's course content, instructional design, and delivery methods;

figure 3 illustrates another prior art method of training wherein the students graduating from the universities were sent to industry with knowledge only (no skills or competence);

figure 4 illustrates one block diagram depicting the new training method of the present invention wherein industry provides an input to the colleges and universities thereby enabling students to graduate with both knowledge and skills;

figure 5 illustrates another block diagram depicting the new training method of the present invention wherein the industry provides an input to the colleges and universities thereby allowing both the universities and industry to make changes to instructional design and course content and instructor delivery methods. feed back being provided to both the universities and industry;

figure 6 illustrates how industry can make changes to university course content to add skills to the student's knowledge thereby enabling the students to graduate from the university with both knowledge and skills;

figure 7 illustrates how students attending the university, when utilizing the new training method of the present invention, can acquire both knowledge and skill in response to input provided to the students by both the university and industry, the graduating students (new employees) acquiring competence and enhanced productivity at an industrial location in response to input provided to the students by industry;

figure 8 illustrates how the graduating students are now sent to industry with both knowledge and skills;

figure 9 illustrates how skill is transferred into competence at the industrial location by using a 'mentoring' process;

figure 10a illustrates how the new method of training in accordance with the present invention (hereinafter called "NExT" , which is an acronym for a "Network for Excellence in Training") is easily understood to be a "training value model" that functions as an interface (i.e., a 'collaborative link pin') between the universities and industry;

figure 10b illustrates the "training value model" of figure 10a, the "training value model" including a forward flow and a reverse or feedback flow, the forward flow illustrating technical subject matter and knowledge transfer and skills development and competence assurance, the feedback flow illustrating certification accreditation and a "quality assurance program" (consisting of the peer review board and the industrial advisory board);

figure 11 illustrating and explaining the technical subject matter of the training value model of figure 10b;

figure 12 illustrating and explaining the knowledge transfer of the training value model of figure 10b;

figure 13 illustrating and explaining the skills development of the training value model of figure 10b;

figure 14 illustrating and explaining the competence assurance of the training value model of figure 10b;

figure 15 illustrating and explaining the Peer Review Board of the training value model of figure 10b;

figure 16 illustrating and explaining the Industry Advisory Board of the training value model of figure 10b;

figures 17 through 30 are utilized in connection with the "Detailed Description of the Preferred Embodiment", figures 19 through 30 illustrating detailed flowcharts which depict, in detail, the "NExT" new training method of the present invention, the "NExT" new training method of the present invention including: (1) the concept of 'collaboration' between universities and industry, and (2) a 'quality assurance program', the 'collaboration' in the new training method in figures 19 through 30 allowing students to graduate from the university with both knowledge and skills and enabling the graduated students to acquire competence and enhanced productivity in industry while simultaneously ensuring, via the 'quality assurance program, that the quality of the courses being taught at the university and the quality of the teachers teaching those courses will continuously remain at an acceptably high level, figures 17 through 30 including:

figure 17 illustrating how the Director of Curriculum, Program Director, and Next Business Development manager are comprised of industry personnel and how the Peer Review Board, the Industrial Advisory Board and the Board of Directors are comprised of a combination of industry personnel and university personnel;

figure 18 illustrating the fact that the universities can be located in different countries;

figures 19 through 21 illustrating the method steps practiced by the "NExT" new training method of the present invention;

figure 22 illustrating a modification to figure 19;

figure 23a illustrating some of the duties of the Program Director 96 in figure 20;

figure 23b illustrating an output from block 76 in figure 19, which represents the 'Course Production Team' that produces a new course in response to a request from a

client, that output from block 76 indicating "Go to subroutine CC in figure 24a" described below;

figures 24a-24b illustrating Subroutine CC which represents the Peer Review Board course audit/acceptance process;

figure 25 illustrating Subroutine DD which represents the Course Production Team coursework planning/development process;

figures 26a, 26b, 27a, and 27b illustrating the primary output from block 76 in figure 19 representing the "NExT" operations process mapping, figures 26a-26b and 27a-27b referencing and including Subroutines CC, DD, AA, BB, and EE;

figure 28 illustrating Subroutine AA which represents a Marketing/Client interface;

figure 29 illustrating Subroutine BB which represents a Course Feasibility Analysis; and

figure 30 illustrating Subroutine EE which represents the Peer Review Board instructor certification process

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to figures 1, 2, and 3, a prior art method of training a student attending a university for the purpose of subsequent employment by industry is illustrated.

In figure 1, at a university represented by block 10, when a person satisfies all the course work required to obtain a college degree, that person has learned certain 'knowledge'. As a result, that person will graduate with knowledge, block 12. When that person is employed by industry, block 14, industry will train the person in-house to add certain 'skills' to their knowledge, block 16.

In figure 2, during the above mentioned prior art method of training, the university 18 will decide what particular type of instructional design and course content and delivery method to provide, block 20, when teaching the persons attending the university. Depending upon the results of that particular type of instructional design/course content/delivery method, the university 18 will receive those results, via line 22 in figure 2, and will subsequently decide what other particular type of instructional design/course content/delivery method to utilize.

In figure 3, during the above mentioned prior art method of training, the university 18 will teach certain subject matter 24, and hopefully the students attending the university will subsequently obtain certain knowledge 26 (hereinafter called 'transfer of knowledge'). Consequently, when the students graduate from the university, the students are sent to industry with knowledge only, block 28.

Referring to figures 4 through 9, a new method of training for training students and engineers attending a university, in accordance with the present invention, is illustrated. The new method of training depicted in figures 4 through 9 (called "NExT" for "a Network of Excellence in Training") is particularly adapted for teaching and training students attending a university who will be subsequently employed by industry.

The new method of training depicted in figures 4 through 9 is adapted to teach the students attending the university both knowledge (obtained from a normal course of study) and skills (obtained primarily from 'simulation' scenarios/programs provided by industry). When the students become employed by industry, the former students/new employees (who have graduated from the university with both knowledge and skills) will be then be trained, at the new industrial location, to add competence to their skills and to add enhanced productivity to their competence. As a result, when the students graduate from the university, those students can more easily adapt themselves to the 'adverse conditions' which exist in industry today. Recall that the aforementioned 'adverse conditions', existing in industry today, relate to the difficulty encountered by industry when it is necessary for industry to train the

graduating students 'in-house' for the purpose of adding skills to their knowledge (depicted as the prior art method of training in block 16 of figure 1). Due to industrial cut-backs and consolidations, it is very difficult for industry to train the students 'in-house' for the purpose of adding skills to their knowledge. However, if the universities and industry could 'collaborate' together to change and/or modify the courses offered at the universities and to change and/or modify the instructional design and/or delivery methods being practiced at the universities for the purpose of teaching the students attending the universities both 'skills' and 'knowledge', the graduating students could more easily adapt to the adverse and changing conditions which exist in industry today.

In figure 4, the new training method of the present invention utilizes the concept of 'collaboration' wherein the universities and industry will collaborate together for the purpose of teaching students attending the university both knowledge and skills thereby enabling those students to graduate with both knowledge and skills and enabling the students to adapt more easily to adverse conditions which exist in industry today. In figure 4, the colleges/universities 30 will receive input from industry 32, via line 33 in figure 4, and, as a result and in response to that input, the colleges/universities 30 will graduate persons with both knowledge and skills, block 34.

In figure 5, the universities 30 and industry 32 will both decide the appropriate instructional design and course content and delivery method, block 36, for teaching the students attending the university. Certain 'results' will be achieved, when the students attending the university are taught the knowledge and skills 34 of figure 4, in accordance with the selected instructional design/course content/delivery method of block 36 in figure 5. Those 'results' are communicated back to both the universities 30 and industry 32, via lines 38 and 40 in figure 5. Based on those results, which are fed back to the universities 30 and industry 32 via lines 38 and 40, the universities 30 and industry 32 will again jointly change the instructional design and course content and delivery method 36 of figure 5 when the students attending the university are being taught the knowledge and skills 34 of figure 4.

In figure 6, when the students (also called "incoming persons") 42 attending the university 30 are being taught the knowledge and skills 34 of figure 4, those incoming persons 42 must take certain courses. However, in figure 6, industry 32 provides an input 44 to the universities 30. Recall from figure 3 that the universities traditionally taught subject matter 24 for the purpose of imparting knowledge 26 to the students attending the university (the so-called "transfer of knowledge"). However, the aforementioned 'input 44' of figure 6, provided by industry 32 to the universities 30, is designed to change or modify the content of the courses being offered at the university for the purpose of adding 'skills' to the 'knowledge' which was previously imparted to the students attending the university, block 46 of figure 6. As a result, when the incoming persons 42 graduate from the university 30, those persons will graduate with both knowledge and skills, block 48 of figure 6.

In figure 7, the concept of 'collaboration' is illustrated, this figure illustrating how students attending a university can acquire both knowledge and skill in response to input provided to the students by both the university and industry, the graduating students (new employees) acquiring competence and enhanced productivity at an industrial location in response to input provided to the students by industry. In figure 7, in accordance with one aspect or feature of the present invention, the concept of 'collaboration' is again illustrated. During this 'collaboration', industry will collaborate with the universities to enable students attending the universities to transfer subject matter 50 into knowledge 52 at the university location (i.e., 'transfer of knowledge' 54), to transfer the knowledge 52 into skills 56 through simulation 58 at the university location, to transfer the skills 56 into competence 60 at an industrial location through the application of those skills 56 while using the concept of 'mentoring' 59, and to transfer the competence 60 into enhanced productivity 62 at the industrial location through innovation 64.

In figure 7, the transfer of subject matter 50 into knowledge 52 takes place through course study normally provided to students at the university (hereinafter called "transfer of knowledge" 54).

In figure 7, the transfer of the knowledge 52 into skills 56 takes place through simulation 58 which is taught/provided to the students at the university location, the simulation 58 teaching the students real-life industrial applications. Industry will provide the simulation 58 scenarios; however, the transfer of the knowledge 52 into skills 56 through simulation 58 is practiced at the university location. During the simulation, the latest technology is taught to the students attending the university. When the latest technology is taught to the students attending the university, 'appropriate delivery methods' are utilized, the 'appropriate delivery methods' including on-line learning, classroom learning, and simulation 58. The on-line learning is provided to the students before the classroom learning is provided. In addition, during the simulation 58, which is taking place at the university location, the university students will utilize a 'controlled simulation' of actual real-life industrial experiences provided by industry, the 'controlled simulation' being consistent with the knowledge 54 obtained by the students during the transfer of subject matter 50 into knowledge 52 through the normal course of study.

In figure 7, the transfer the skills 56 into competence 60 occurs via the practical application of those skills 56 using the concept of 'mentoring' 59. Industry provides or teaches the students the skills 56 at a university location; however, industry provides or teaches the former students the competence 60 at an industrial location. During the practical application of those skills 56 at an industrial location, the students will utilize software programs that a client may want to use or provide; and the students will utilize datasets that a client may want to provide. This enables the transfer of the university student's skills 56 into competence 60 while, simultaneously, allowing the university students to solve real-life business problems for a client.

In figure 9, during the transfer of the skills 56 into competence 60, the concept of 'mentoring' is utilized. A learning environment 66 is established at the university student's new industrial location, that learning environment 66 being provided as a result of a 'mentoring' process. During the 'mentoring' process, the former university

student (hereinafter, new employee or 'engineer') 68 will interface with both a supervisor 70 and a mentor 72 at the new employee's new industrial location. The mentor 72 accompanies the new employee/engineer 68 to courses offered at the industrial location and the supervisor 70 interfaces with the new employee/engineer 68 after the course work is completed.

In figure 7, the transfer of competence 60 into enhanced productivity 62 takes place at an industrial location, wherein industry will subsequently transfer, or influence the transfer of, the former student's competence 60 into enhanced productivity 62 at the industrial location through innovation 64.

In figure 8, therefore, when the students graduate from the university, the students will have studied certain subject matter 50 to thereby learn and possess a working knowledge 52 of that subject matter. In addition, the students will also possess certain skills 56, these skills representing real-life industrial experiences which were obtained at the university location through the simulations 58 of figure 7 which were provided by industry. Consequently, the students graduating from the university will be sent to industry with both knowledge 50, obtained by studying the subject matter 50, and skills 56, obtained by experiencing real-life industrial problems at the university location via the simulations 58 which are provided by industry, block 74 of figure 8.

Referring to figures 10a through 16, a "Training Value Model", which represents and illustrates the novel method steps of the "NExT" new training method in accordance with the present invention, is illustrated. The "Training Value Model" utilizes the concepts set forth in figures 5 through 9 which were previously discussed.

In figure 10a, the "NExT" Training Value Model 15 (which represents and illustrates the "NExT" new training method of the present invention) functions as an interface or a 'collaborative link pin' between the universities 17 and industry 19. The "NExT" new training method is able to meet the industry training needs through the collaboration of the industry-university partners, combining 'intellectual capital' with

'flexible delivery methods' in a Training Value Model that is unique in the training industry today.

For example, with regard to the aforementioned 'intellectual capital', the University of Oklahoma and other partner universities are experts in instructional design and the assessment and management of the 'transfer of knowledge', which transfer is performed by the universities at the university level. However, industry, through its "NExT" program, can add value by designing simulation systems and incorporating the latest engineering practices into the simulation systems. Industry will provide these simulation systems to the universities for incorporation into the courses taught by the universities at the university level. These pre-designed application exercises allow engineers and university students to convert coursework knowledge into modern skill sets, in a low risk test bed environment. By interfacing with industry, "NExT" is able to provide a mentored learning environment where engineers can practice their skills thereby developing a certain level of competence assurance.

With regard to the aforementioned 'flexible delivery methods', flexible training delivery methods are an important requirement in an asset team environment. Often, training must be delivered to the asset team on location because small efficient asset teams cannot allow a key team member to be away for extended periods of time. For larger topics, coursework can be structured into smaller units and delivered over time. For example, perhaps a series of one-day training sessions, or even a series of lunch and learn sessions, delivered over a few months while integrating self study CD-ROM programs would be useful. Whenever possible, the use of client preferred software and proprietary data sets will add relevance and the possibility of providing actual solutions to asset team problems.

In figure 10b, a more detailed construction of the Training Value Model 15 of figure 10a is illustrated in figure 10b.

In figure 10b, the Training Value Model 15, which illustrates and represents the "NExT" new training method in accordance with the present invention, includes a

series of progressive training levels. Depending on the desired level of learning, course work can be designed that will ensure academic standards are high yet the course work can be practical in application.

The Training Value Model 15, which includes a series of progressive training levels, further includes a forward path and a reverse path. The forward path of the Training Value Model includes technical subject matter 15a, knowledge transfer 15b, skills development 15c, and competence assurance 15d. The reverse path of the Training Value Model includes Certification Accreditation 15e, Peer Review Board 15f, Industry (or Industrial) Advisory Board 15g, and Director of Curriculum 15h.

In figure 11, the technical subject matter 15a part of the Training Value Model 15 of figure 10b involves converting technical information into coursework. NexT utilizes a "virtual faculty" which consists of a combination of academia and industry. With this "best-in-class" approach, instructional design is combined with the latest technology and appropriate delivery methods; and the result is improved value in the coursework. In figure 11, both academia and industry collaborate together to provide the following five elements for the coursework: (1) proper instructional design, (2) latest technology, (3) practical application (i.e., the simulation 'skills'), (4) delivery methods, and (5) subject matter experts. In figure 11, a feedback loop 15a1 represents a type of 'quality assurance program' which will ensure that academia and industry will, once again, collaborate together to improve upon the above five elements of the coursework.

In figure 12, the knowledge transfer 15b part of the Training Value Model 15 of figure 10b involves learning and understanding the subject matter through the use of appropriate delivery methods, the use of a virtual faculty, the use of qualified presenters, by screening course candidates, and by controlling the process. Proper management of the transfer of knowledge ensures that the engineer actually learns and understands the subject matter. This requires choosing the appropriate delivery method. Not all coursework needs to be delivered in a class room environment. Distance learning can be just as effective and much more flexible. The coursework

presenter must be qualified. Successful presentation takes knowledge of the subject, a desire to teach, and training to be effective. For more advanced subject matter, "NExT" screens candidates who register for the course. If the course is too advanced for the knowledge and skill level of the applicant, "NExT" suggests that they first attend prerequisite course work. "NExT" does not only issue certificates of attendance; rather, the engineer needs to attend classes, participate in class, and pass an exam to ensure that there is an understanding of the subject.

In figure 13, the skills development 15c part of the Training Value Model 15 of figure 10b involves developing a proficient ability through working applications, and more particularly, through the use of simulation laboratories and predesigned application exercises. In order to progress from knowledge of a subject to the acquisition of skills, the "NExT" simulation laboratories are utilized. The "NExT" simulation laboratories include a plurality of pre-designed application exercises. The student/enginner, attending the university, can develop a proficient ability by utilizing and working through these predesigned application exercises.

In figure 14, the competence assurance 15d part of the Training Value Model 15 of figure 10b involves providing solutions through innovative use of the previously acquired skills. For the university coursework to include competence assurance, "NExT" creates a low risk learning environment where skills can be practiced. "NExT" includes "mentoring" in some coursework where it is important that the engineer can have skills and provide solutions through the innovative use of those skills. "NExT" has created this low risk learning environment through workshops which use relevant data sets and mentor assisted on-the-job application of skills which utilize a three way relationships between the engineer, the mentor, and the engineer's supervisor (as illustrated in figure 9). "NExT" has on-line virtual reality programs where distance learning programs can actually provide an acceptable level of competence. The "NExT" university partners will have access to these programs to provide students with a better skill set with which to enter the industrial environment.

In figure 10b, in the certification accreditation 15e part of the Training Value Model 15, there will be master's level programs available by "NExT" through the university systems. However, the goal for a "NExT" certified course is to be recognized as having university level academic excellence, containing the latest technical information with a managed knowledge transfer process. As a result, the level of industry training can be raised above merely receiving a certificate of completion. Engineers attending the "NExT" courses must successfully complete all requirements to receive certification.

In figures 15 and 16, involving the "Peer Review Board" and the "Industry Advisory Board", the "NExT" Training Value Model 15 of figure 10b is unique, among other things, because of its system of 'quality assurance'. Each university partner has a Center of Excellence headed by a Director of Curriculum for a particular field of expertise. For example, the University of Oklahoma is the Center of Excellence for Well Construction/Operations, and it has its own Director of Curriculum, but, in Tulsa, the University of Oklahoma is the Center of Excellence for Petrophysics and Geosciences, and it also has its own Director of Curriculum. The Directors of Curriculum function as the custodian of the "NExT" curriculum within their field of expertise. They collaborate with the other "NExT" partners, and with experts throughout industry, to ensure their course work is developed and maintained to the highest standards possible. Two other Centers of Excellence are located at Texas A&M University for Petroleum Engineering and Geoscience and Heriot-Watt University, Edinburgh, Scotland, for distance learning in Petroleum Engineering.

In figure 15, each Director of Curriculum has a "Peer Review Board". The Peer Review Board consists of representatives from all the "NExT" partners, and from industry on an 'ad hoc' basis. The mission of the Peer Review Board is: "to provide a uniform, independent and professional quality control for "NExT" courses, programs, instructors, and subject matter experts, ensuring that they meet or exceed both academic and industry approved standards". The "NExT" Peer Review Board will provides one measure of the aforementioned "quality assurance" by auditing the

university course work, auditing the presenters (i.e., instructors) of the course work, and by providing a technology watch.

In figure 16, on a broader basis, "NExT" also provides an Industrial Advisory Board, which provides an additional measure of the aforementioned "quality assurance". The Industrial Advisory Board is composed of "NExT" partner representatives, and several representatives from oil companies. The mission of the Industrial Advisory Board is: "to ensure that NExT is a network of recognized excellence in petroleum industry training providing the transfer of leading edge and established technology to the petroleum industry". The Industrial Advisory Board will ensure that the courses stored in the "NExT" Curriculum Library (94 in figure 20) meet the needs of industry.

In figures 15 and 16, the Peer Review Board of figure 15 and the Industry Advisory Board of figure 16 both provide a 'quality assurance' mechanism to ensure that the quality of the courses being taught to students attending the university will continue to maintain a consistently high level. The Peer Review Board of figure 15 will periodically audit the coursework being taught at the universities, and it will also audit the teachers/professors that teach these courses at the universities to ensure that the quality of the courses and the teachers and professors teaching the courses will continue to maintain a consistently high level. The Industrial Advisory Board of figure 16 will monitor the content of the courses stored in the "NExT" Curriculum Library (94 in figure 20) to ensure that these stored courses will continue to meet the needs of industry.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A detailed flowchart of the "NExT" new training method of the present invention will be set forth below with reference to figures 17 through 30 of the drawings. However, before discussing the detailed flowcharts of figures 19 through 30, the following discussion will summarize the "NExT" new training method in accordance with the present invention.

Summary of the "NExT" new training method of the present invention

The ownership in copyright of the following "Summary of the 'NExT' new training method of the present invention" resides with the "Offshore Technology Conference (OTC)".

As the oil industry has continued to consolidate over the last 20 years, company profiles, core competencies, and the very demographics of many companies have changed radically. This is true throughout the industry involving operating companies, service companies and drilling companies. As hydrocarbon reserves continue to become more challenging to exploit, the importance of technology plays an ever increasing role in E&P operations. As the technical complexity increases, many companies are unwilling to support the budgets necessary to maintain non-core technologies in-house. Some companies have found it more efficient to out source through service companies whose technology is a core competence supported by research and engineering. Mergers and acquisitions that are driven by the strategic need to acquire reserves and or markets, require tremendous rationalizations in the resulting workforces to reduce unnecessary numbers of engineers, technical and administrative staffs. Many operators are trimming engineering staffs whose primary responsibilities are now focused on finding replacement reserves. The operations of mature fields are being outsourced to independents as well as to service companies whose profiles are changing. However this trend removes the low risk environment that has traditionally served as the training ground for new engineers. Again, outsourcing results in the reduction of excess engineering staffs. In many cases, this results in a younger, well educated workforce who lack broad diverse experience. In their strive for efficiency, many companies have changed the demographics of their work force leaving them without the experience needed to mentor younger engineers. The increased technology, acquisitions, downsizing and efficiency along with outsourcing are all contributing factors to the skills gap we are experiencing in the E&P industry today.

Many companies view training as just another necessary expense, not really something that contributes directly to generating revenue. Most personnel are trained because the employer needs a specific skill. Sometimes a behavioral change is needed or training is mandated or

legislated such as safety. In other cases training is a reward for good performance, and the employee is sent on a one week seminar in a field of his/her interest. Many view this as a kind of "training vacation". There are, however, some companies who view training as an investment; an essential element in their workforce strategy. These are also the companies that have performance management programs, and management is actively involved in the training and development of the companies workforce.

Formal training programs often attract the most ambitious young graduate engineers. Many of the companies that view training as just another necessary expense, recruit graduate engineers from universities expecting them to already have the skills necessary to do the job. With their academic knowledge coupled with informal on-the-job activities, the staffing requirements of many companies are met this way. While the careers that are available within this scenario can be secure, many are not very dynamic. Most of the top graduates of the universities are interested in joining a company that can offer a strong training program where they have the opportunity to develop and realize their career potential.

Competence, the successful on-the-job application of skills, is the real objective of effective training. All companies strive to have a competent work force for the job at hand. This is when the training structure becomes important. The learning environment, management commitment and training delivery methods are all essential elements in creating the competence that is needed. Few companies have developed full scale Competence Assurance programs. Companies that do have full scale programs, usually have applied it strategically where the operational situation is critical, and a lack of competence could result in a catastrophic incident. Industry trends are affecting our ability to train and develop competence in our engineering staffs.

As increasing levels of technology are incorporated into operations, efficiency and therefore competence will differentiate operators. On a global basis, having the ability to provide technology transfer programs will be a factor in forming Joint Venture partnerships between operators and National Oil Companies. Operators with small efficient staffs will need to find solutions enabling them to cope with program requirements. Several factors have to be

changed before effective solutions can be found, and the paradigm shift in training that is needed can be obtained.

More collaborative learning will evolve. The world Wide Web and Netscape have miniaturized the immense - making it possible for large numbers of experts from different fields in remote locations to think, interact, and learn from each other on any complex issue or problem. Successful training programs will be the result of teams that combine skills and expertise from various organizations and companies. By strategic partnering with specific universities and subject matter experts from industry, the programs can be academically sound, yet practical in their approach. Team members from operating companies, the service sector, and universities all need to work together to provide a solution. Through strategic partnering, a virtual faculty can be formed to provide the best in class subject matter experts to develop and deliver the program course work.

Several criteria can be identified that are essential to create an effective training program for any company that will meet the training needs of today. Key elements are:

1. The latest technology available must be taught.
2. The most appropriate delivery methods should be applied.
3. With reference to the subject matter, the class should start as an intellectually homogeneous group.
4. The knowledge transfer process must be controlled.
5. Coursework must include hands-on simulation.
6. Courses must be flexible in terms of time and location.
7. Modules must be designed to adapt where a preferred software system is required.
8. Modules must have the ability to incorporate the client's own data sets.
9. Competence assurance needs to be attained to a defined skills level objective.
10. Certification is required.
11. Engineers will deliver solutions to actual business and/or engineering problems.
12. The training has an immediate impact on the asset unit's productivity.

These 12 elements represent issues that are common in an effective training program in the global training environment today. This is not an exhaustive listing of key elements in training. For example "mentoring" is not specifically mentioned, but as discussed below, mentoring can be a desirable component of an effective training program.

As the industry ventures further offshore, the engineering challenges of operating in deep water will continue to add tremendous complexity to program designs. Well designs have become more complex and will continue to challenge engineers who work in hostile (high pressure, high temperatur and deep water) environments or need to construct complicated multilateral wells. In many cases, the technical expertise required is no longer a core competency supported in-house by the operator. Outsourcing to, or alliancing with, technical experts becomes necessary.

Utilization of the latest technology will be absolutely essential in managing efficient and profitable operations in the future. Training providers must ensure that their program's underlying technology is current and up to date. 'Collaboration' between universities and industry's leading practitioners of modern technology, with a link to research and development, is essential. Training providers should incorporate Peer Review systems that combine expertise from these different organizations. The Peer Review Board (PRB) must maintain a technical watch within it's defined field of expertise. The Peer Review Board must not only function as an audit process assuring that academic standards are met but also insure the practical needs of industry are inherent in the subject matter of all course work to be used in training. Peer Review Board members should approve audited coursework for certification. Certification can include accreditation as part of the curriculum within a university degree program. To certify coursework as Continuing Education Units (CEU)-required to retain professional standing, the instructors and the course content must successfully pass an academic review process.

Integrating processes through collaborative teamwork will have as large an influence on engineering success in challenging environments as the knowledge and technology to which engineers have access. Learning to effectively align goals, manage the interfaces, and utilize the expertise of all the team members on a project, is where the power to overcome risk lies.

The team must include all members of a project including the operator, service companies, drilling contractors, and critical third party suppliers. The behavioral changes and skills necessary for effective integrated team work can only be achieved through training and a commitment by management to develop collaborative teams as a work place standard.

Course delivery methods are currently being re-examined by virtually all organizations involved in training. A decision as to the best delivery method for a particular course will depend on the subject matter and the situational requirements. Whether the delivery is classroom based or distance learning, the delivery process in industry training needs to be a threaded conversation. The common thread links new information with a knowledge transfer process between students and subject matter experts that results in demonstrated competence assurance. The skill to transform text into an educational format, then to deliver the coursework ensuring a transfer of the knowledge, is a professional process.

Course work production, through a "course production team", has several elements where each element may require a separate or a combination of individual expertise. Production teams are needed that combine instructional designers, subject matter experts, graphics artists, programmers, and a quality control function. Some production staff members may be able to perform multiple roles on the team. However, to develop the most effective coursework, all elements must be addressed. The decision to maintain production teams in-house or to outsource parts or all of the elements of the team is a strategic decision that a training provider has to decide.

With the rapid development of the World Wide Web and improving bandwidth capacities, training and educational material, regardless of the origin is becoming accessible on a global scale. Whether delivery is web based, on a CD ROM format, or through video based, distance learning must be used selectively. The application of a particular delivery method has to be appropriate to the subject matter. Not all subject matter can be effectively taught outside a classroom setting. Conversely, not all subject matter needs to take up expensive classroom time either. The classroom itself is evolving as a subject matter tutorial session combined with simulated application workshops.

Developing distant learning course work, whether it be converting an existing class room course or creating new subject matter, is expensive. Gaining the most from the investment is a matter of strategy taking into consideration the subject matter to be included, and how elaborate the multimedia content is to be. Through curriculum analysis, a review needs to be made of the information content, the number of repeatable processes involved, and the applicable technology required. From an economic perspective, good candidates for distance learning include basic scientific principles that will not change over time, or technologies with well established concepts. Utilizing distance learning for fast changing technology where the course work will require continual updating to avoid obsolesce, can still be effective, but can also be very expensive to maintain. With the impressive graphic arts technology today, there is the constant battle over "sizzle versus substance" of on-line course work. The cost of very elaborate multimedia course material may exceed the value of the subject matter. A rational balance needs to be kept in perspective.

Pre-course study can be a very important component to classroom based courses where more advanced subject matter is being taught. Participants need to reach a certain level of knowledge, prior to attending the course. Without the participants having the prerequisite level of understanding, successful classroom interactions will be difficult. Through the use of distance learning, the course will start with a more intellectually homogeneous class.

In a classroom setting, the ability of the presenter(s) will determine if a course is successful or not. We are all familiar with very knowledgeable subject matter experts who are simply poor teachers, who attempted to conduct classes in their field of expertise. In many cases, the attempt has failed even though the person was a recognized, published expert in their field. To write a text book on a particular subject is one thing. To convert that text into a learning experience requires professional instructional design. The presenter must have the desire and professional training to successfully conduct training that will transfer the knowledge.

For course work that is accredited as part of a course of study within an university degree program, training organizations who are in association with a university system must provide "qualified" presenters in order for course work to be accredited. Qualifications are defined by

the university and include academic qualifications, the level of subject matter knowledge, and formal teaching certification requirements.

One of the first fundamental steps in course development is to establish the key learning objectives. The course is then designed around accomplishing these objectives. When presenting course work to an adult audience who may have extensive experience in the industry, but varying levels of knowledge in the subject matter, it can be difficult to keep participants focused on the course curriculum needed to accomplish the learning objectives. There will always be a tendency for individuals to drift into personal agendas, stray onto associated subjects, and sometimes demonstrate a reluctance to accept new ideas. Distractions will be present, but the focus should always be on the course objectives.

Engineers need to have the competence to make informed decisions or recommendations when faced with situations that deviate from the planned program. Tools used in training should be just that, tools. The underlying engineering principles that support a technical skill or knowledge should not be masked within a computer applications program unless it will never be needed in the engineer's decision making process. Through advanced technology, masses of information are now available to model solutions around more parameters than ever before. Computer Based Training (CBT) is an excellent tool to simplify processing complicated procedures. CBT should be and needs to be incorporated into modern training programs, but not at the expense of losing the knowledge of the underlying technology.

Effective training has to require attendance, participation, and a demonstration either through examinations and/or project presentations that the knowledge was transferred. When training is attempted without incorporating an immediate feed back loop, the actual transfer of knowledge can be impeded or not achieved at all. Many companies pay large tuition fees and incur other expenses to send engineers to courses that make no significant impact on the employees' post training technical behavior and problem solving process.

Where possible, hands-on simulation should be included within the course work. Many companies that require training for their employees want to incorporate their own data sets and preferred software systems into the course work. This is a practical way to base the

training around a familiar environment with the tools the engineers actually use. Dedicated simulation exercises can also be used to solve immediate asset unit business problems. Through hands-on simulation in a problem solving exercise, the knowledge transfer is demonstrated, and competence is assured through application in solving a problem. As discussed below, the inclusion of hands-on simulation has an impact upon the course design

Training must be flexible in terms of technology, format, time and location. Course work should be designed around a modular format, where data sets can be inserted into an overall learning matrix, linked either with a software package provided by the training organization, or specific software provided by the client. To accomplish this, a certain degree of up-front course work design is needed, in consulation with the client, prior to the start of the class. Usually this additional investment by the client delivers solutions to actual business and/or engineering problems. Competence assurance is verified, at least to a certain skill level, and will have an immediate impact on the asset unit's productivity. The key premise is that knowledge can be converted into competence through simulation. In dedicated training situations, designing coursework using client's software and real data sets can produce the additional bonus of solutions to real problems.

With the new lean structures that many companies are striving for today, training needs to function within the work schedules of the engineer and management as much as possible. Traditionally, there was very little flexibility in the system of higher technical learning. Training took place only at established training facilities. Companies and personnel catered to the training facility schedule, rather than training catering to the needs of the company and personnel. Many companies are now structured into efficient asset units that cannot afford to send key members of their operating staffs to a training course for long periods of time. Training must be segmented into modules combining self study modules, based either on line or on CD ROM, and supplemented through shorter "lunch and learn" sessions, weekend retreats, or evening classes. The content of the modules can be designed in an accumulative sequence, providing a complete program over a period of time. While these programs do exist today, the need for such flexibility and integration with the work place will be even more important in the future.

Mentoring is another component of training that has become unavailable or is grossly under utilized. Guild societies and apprenticeship programs have existed for hundreds of years as effective ways to train craftsmen in their trade. While realizing that throughout history much of this was nothing more than extended indentured servitude, the more modern concept has been an effective way to pass wisdom within companies from one generation to the next. However with the demographic changes we see happening today in lean, efficient organizations, the ability to mentor is becoming a lost art form. Many of the more experienced engineers are gone, and those who are left simply do not have the time or motivation to do a proper job of mentoring. Their performance incentives are based on other criteria, not on how well they mentor the younger generation.

One example of how the mentoring concept has been incorporated into a well engineering program is based on the premise that employee development is the responsibility of management in partnership with the training provider. In this example, the mentor role focuses on ensuring that the proper environment will exist for the employee to be able to transform the technical knowledge gained at a formal class into competence, demonstrated by application under the guidance of, and witnessed by, the employee's supervisor. The program's sequence is as follows:

In Phase I, a mininmal desired level of conceptual knowledge is established. This is accomplished by sending each student CD-ROM-based, self-study, self-paced, pre-course study material. Competency level is evaluated at the beginning of the classroom setting.

Phase II is a four week course in a classroom setting with students in residence at a learning center. Each lecture has specific learning objectives. Knowledge transfer is validated through testing at various stages during the four weeks. Teams are formed to participate in a well engineering simulation program that includes various facets of conceptual well design, detailed well planning and well programs. Each team simulates the well construction based on their own well program.

The final Phase, which immediately follows the four week course, is a five month mentor assisted program of on line self study to further some of the concepts introduced at the

course. In addition, the student must complete and formally present to his supervisor and mentor, the results of a practical project. The student/engineer must also maintain an on-line log book and credit point system to track his/her progress, and finally, must pass an exam in order to receive a university underwritten certificate of completion.

Since the program is mentor assisted, the class size is held to a maximum of twelve participants. It was felt that this would be the maximum number of students that a mentor could effectively manage. The mentor arrives at the learning center with the engineers to start the four week course. The mentor is an industry professional dedicated fully to the mentoring role, and will not participate in the course delivery. During that time, the mentor starts developing a relationship with each of the engineers. The mentor needs to know the course curriculum, how each engineer progresses through it and their individual personalities. The mentor will also act as an informal feedback loop between the class and the lead instructor. During this time the mentor will contact each engineer's supervisor, located at the sponsoring company. The supervisor is sent an information packet that contains a general description of the course, outlines the on-line credit point system, and presents information regarding the expected competency level of the student. The mentor explains the course objectives, how the engineer is progressing, and reviews the information packet clarifying what the curriculum will be for the next five months following the course. During this time of enrollment, the mentor and supervisor work together to identify a project the engineer can complete once he or she arrives back to work. The main role of the mentor is to create a three-way relationship between the engineer, the supervisor and the mentor, to ensure that the correct environment will exist for the engineer to demonstrate to the supervisor, the skills learned during the course. Through this the engineer can assure the supervisor of his or her competence and the ability to assume more responsibility, making a positive contribution to the asset unit performance. The mentor will be in constant communication with the engineer via email, telephone and fax. The mentor will visit with the engineer and his supervisor at least once during the five month period, a second time to attend the formal presentation of the project by the student and finally, to administer the final exam and present the certificate of completion.

Detailed Discussion of the "NExT" new training method of the present invention

Referring to figures 17 and 18, before beginning a discussion of the detailed flowcharts depicting the "NExT" new method of training in accordance with the present invention, in figure 17, the flowcharts to follow refer to a Director of Curriculum, a Program Director, and a Business Development Manager. As noted in figure 17, the Director of Curriculum and the Program Director and the Business Development Manager are each comprised of industry personnel. However, the Peer Review Board and the Industrial Advisory Board and the Board of Directors are each composed of a combination of industry and university personnel. In figure 18, the term "university" refers to a plurality of universities, one located in the United States, one located in Scotland, and others located in other countries.

Referring to figures 19 through 21, a detailed flowchart is illustrated which depicts, in detail, the "NExT" new training method of the present invention that utilizes the concept of 'collaboration' between the universities and industry. By utilizing the concept of 'collaboration' between universities and industry, the new training method of the present invention in figures 10a and 10b allows students to graduate from the universities with both knowledge and skills before acquiring competence and enhanced productivity at an industrial location. This enables the graduating students to more easily adapt to the adverse conditions that exist in industry today. In figures 19-21, the acronym "NExT" is used. This acronym refers to a "Network of Excellence in Training (NExT)", which is the project name for the new method of training in accordance with the present invention.

In figure 19, before beginning a detailed description of figures 19-21, in figure 5, industry 32 provides an input to the colleges/universities 30 for influencing a change in the instructional design and course content and delivery methods, block 36, in the courses taught to the students attending the university. Recall in figure 5 that the academia 30 and industry 32 jointly influence that change 36. Feedback 38 and 40 to academia 30 and industry 32 will influence further change 36 in the course instructional design and course content and course delivery methods. In figure 19,

industry 32 (from figure 5) will influence that change 36 by providing an input to the "Course Production Team" block 76 in figure 19 (see the block 76 in figure 19 entitled "Course Prod Team – subject matter expert – instructional design – graphic artist – programmer – QA"). The Course Production Team will actually develop a course if that course, requested by the client, is not stored in the Next Curriculum Library. Industry 32 provides assistance to that Course Production Team by providing subject matter experts or instructional designers or graphic artists or programmer or quality assurance, as discussed below. The course that is developed by the Course Production Team will implement the steps shown in figure 7; that is, the students will transfer subject matter into knowledge through normal course study, and transfer knowledge into skills through simulation provided by industry 32. In addition, in figure 21, locate block 78 "Dispatch coursework to client"; block 78 will involve the use of a mentor 78a.

In figure 19, when a client, block 80, has a training need, that client 80 can either interface with an oilfield service representative employed by industry 32, block 82 in figure 19, or that client 80 can interface with a Business Development Manager, block 84 in figure 19 (where block 84 is entitled "Point A Next BDM", the acronym "NExT" meaning "Network of Excellence in Training", and the acronym BDM meaning "Business Development Manager"). Hereinafter, block 84 in figure 19 will be referred to as "Business Development Manager 84".

In block 86 of figure 19, which represents a decision triangle, the Business Development Manager 84 will determine if the training need that the client 80 requests is a proprietary service or product belonging to industry 32 (such as a fracturing fluid or a logging technique or software).

If the training need requested by the client 80 is a proprietary service or product belonging to industry 32, the Business Development Manager 84 for industry 32 will refer that client 80 back to the appropriate business segment for industry 32, block 88 in figure 19 (where block 88 is entitled "SL Business Segment"). That business

segment 88 for industry 32 will then develop the training for that client 80 relating to industry's proprietary service or product.

If the training need requested by the client 80 is not a proprietary service or product belonging to industry 32, but that training need represents an otherwise valid science or environment involving an otherwise valid course offering, there are a couple of ways in which the business development manger 84 can proceed. First, depending upon the subject matter which the client 80 wants to develop, the Business Development Manager 84 for industry 32 will contact an appropriate Director of Curriculum (recall that each Director of Curriculum has his own unique subject matter expertise). In figure 19, note that block 90 represents the Director of Curriculum for Well Engineering and Operations, and block 91 represents the Director of Curriculum for Petroleum Engineering and Geoscience. In this case, assume that the Business Development Manger 84 contacts the Director of Curriculum for Well Engineering and Operations, block 90 in figure 19 (block 90 being entitled "Director of Curriculum WE & Ops Eng."). Hereinafter, block 90 will be referred to as "Director of Curriculum 90". The Director of Curriculum 90 will determine if a course has already been developed that is appropriate for the client's needs by referring to block 92 in figure 19 entitled "Next Curriculum Retrieve Developed Course Work", block 92. In figures 19 and 21, the Director of Curriculum 90 in figure 19 will identify that course, that has already been developed, which resides in the "Next Curriculum library", block 94 in figure 20. Then, the Director of Curriculum 90 will notify the Program Director, block 96 in figure 20. In figures 20 and 21, refer to the decision triangle 98 in figure 21. The Program Director 96 in figure 20 will examine that course, that has already been developed and which resides in the Next Curriculum Library 94 of figure 20, and, referring to the decision triangle 98 in figure 21, the Program Director 96 in figure 20 will determine if that course is either accredited (i.e., credit will be given if that course is taken) or non-credit (i.e., credit will not be given if that course is taken). If that course is accredited (see element numeral 100 in figure 21), the Program Director 96 in figure 20 will go back to the Director of Curriculum, block 102 in figure 21; and the Director of Curriculum 102 will screen the applicant, block 104 in figure 21. If the applicant is not qualified to take an

accredited course (i.e., the applicant is not academically qualified or the applicant has a language problem or low computer skills or not enough industry experience), then the applicant is rejected for the class, block 106 in figure 21. However, if the applicant, after being screened, meets the needs for the coursework, then the Director of Curriculum 102 advises the "NExT" Administrator, block 108 in figure 21. The NExT Administrator 108 registers the student in the course, invoices the company who is sponsoring the student, and reserves a place for the participant or student in that 'course', block 110 of figure 21. Recall that this 'course' is one which has already been developed and which resides in the NExT Curriculum Library 94 of figure 20.

In figure 19, the above description relates to classroom delivery based courses. Refer back to blocks 80 and 84 in figure 19. Instead of using already existing classroom delivery based courses, the client 80 in figure 19 may want to book an 'individual course' via the website of industry 32 or via an e-mail connection between the client 80 and industry 32. Therefore, in figure 19, the client 80 may book a 'classroom based delivery' type of 'individual course' via the website or e-mail by contacting the NExT Administration Manager, block 112 of figure 19. In figure 20, locate decision triangle 114 entitled "course delivery method". The NExT Administration Manager 112 of figure 19 has a decision to make: will the individual course be a 'classroom delivery' type of course, or will it be a 'distance learning' type of course, decision triangle 114 of figure 20. If the individual course is a 'classroom delivery' type of course (element numeral 116 of figure 20), the NExT Administration Manager 112 of figure 19 notifies the Program Director 96 of figure 20. At this point, the Program Director 96 of figure 20 repeats blocks 98, 102, 104, 106, 108, and 110 as previously discussed. That is, the Program Director 96 determines if the course is accredited. If the course is accredited (100 in figure 21), the Program Director 96 notifies the Director of Curriculum 102 who screens the applicant 104. The Director of Curriculum 102 either rejects the applicant 106 as being unqualified or, if the applicant is qualified, advises the NExT Administration 108 who then reserves a place for the participant or student 110. If the course is not accredited (non-credit), the Program Director 96 of figure 20 notifies the NExT Administration Manager, block

118 in figure 21. The NExT Administration Manager 118 of figure 21 then registers the student, invoices the student, retrieves the material from the NExT Curriculum Library 94 of figure 20, and reserves a place in the class for the student, block 120 in figure 21. The above paragraph describes a 'classroom based delivery' type of 'individual course' that the client 80 wants to book via the website or e-mail of industry 32 (see element numeral 122 of figure 19).

In figure 20, refer back to decision triangle 114 entitled "course delivery method". In figure 19, if the client 80 books an 'individual course' via the website or e-mail of industry (numeral 122 of figure 19), and that 'individual course' is a 'distance learning' course (see numeral 124 in figure 20) instead of a 'classroom delivery' course (numeral 116 in figure 20), the NExT Administration Manager 112 in figure 19 will notify the Director of Curriculum for Distance Learning, block 126 in figure 20. Refer now to decision triangle 128 in figure 21. The Director of Curriculum for Distance Learning 126 of figure 20 must decide if the 'distance learning' course is an accredited course (numeral 130 in figure 21) or a non-credit course (numeral 132 in figure 21). If the 'distance learning course' is accredited 130, that type of distance learning course could be a masters degree course at a university. The Director of Curriculum 126 will screen the applicant, block 134 in figure 21, to determine if the applicant can become a student in the masters degree program in the university. If the Director of Curriculum 126 determines that the applicant cannot become a student, the applicant is rejected, block 136 in figure 21. However, if the Director of Curriculum 126 determines that the applicant does, in fact, meet their requirements and the applicant can become a student in their masters degree program (for example), the course material will be retrieved from the NExT Curriculum Library (94 in figure 20), block 138 in figure 21, the student is registered and invoiced, and the coursework is dispatched to the client as a distance learning package, block 140 in figure 21. If the 'distance learning course' is non-credit 132 in figure 21, the screening process (which is depicted in block 134 of figure 21) is skipped, the non-credit 'distance learning' course is retrieved from the NExT Curriculum Library (94 in figure 20), block 142 in figure 21, the student is registered and invoiced, numeral 144, and the

non-credit 'distance learning' coursework is dispatched to the client (80), block 146 in figure 21.

In figure 19, the Business Development Manager (BDM) 84 determines if the course requested by the client 80 is a valid "NExT" course offering (in block 86 "Course Content and Objectives") by determining if the course is stored in the "NExT" Curriculum Library 94 of figure 20. If the requested course is stored in the "NExT" Curriculum Library 94, the Business Development Manager 84 notifies the appropriate Director of Curriculum, such as the Director of Curriculum for Well Engineering and Operations Engineer, block 90 in figure 19.

If the course requested by the client 80 is not stored in the "NExT" Curriculum Library 94 of figure 20, the Business Development Manager 84 notifies the appropriate Director of Curriculum, such as Director of Curriculum 90 in figure 19, who is responsible for putting together a "Course Production Team", block 76 in figure 19.

The Course Production Team 76 consists of subject matter experts, instructional designers, graphic artists, programmers, and quality assurance, block 76 in figure 19. The Course Production Team 76 will develop the new course requested by the client 80 and that new course will be saved and stored in the "NExT" Curriculum Library 94 in figure 20. In figure 19, note that Industry 32 provides an input to the Course Production Team 76 by providing, as necessary, the subject matter experts or instructional designers or graphic artists or programmers or quality assurance. Consistent with the steps shown in figure 7, the new courses being developed by the Course Production Team 76 will allow students attending the university of figure 7 to transfer the subject matter 50 into knowledge 52 through normal course study, and to transfer the knowledge 52 into skills 56 through the use of simulation programs 58 which are provided to the university by industry 32. That is, the students attending the university will study the simulation programs 58, at the university location, to allow the students to obtain the necessary skills 56 which represent real-life industrial experiences.

Now that the new course is saved in the NExT Curriculum Library 94 in figure 20, the Program Director 96 in figure 20 has access to that new course for performing the processes in the blocks of figure 21. For example, the Program Director 96 notifies the Director of Curriculum 102 in figure 21 for ultimately reserving places for students in that new course pursuant to block 110 in figure 21.

In figure 19, if the client 80 wants to book a 'complete class' but the requested complete class is not a public offering, the output from decision triangle 86 in figure 19 will be the 'closed course scheduling' output 150 from decision triangle 86. Referring to numeral 122 in figure 19, which identifies "direct open course booking", the direct open courses are those which are being offered by "NExT" . The client 80 can book, via the website or e-mail 122, the open courses which are being offered. However, if the client 80 wants industry 32 to develop a specific course for its students which is not a course being offered by "NExT" , that specific course that is not being offered by NExT is called a 'closed course'. In figure 19, the "NExT" Administration Manager 152 in figure 19 will look at the 'course delivery method' for the closed course, block 154 in figure 20. It could be a 'classroom delivery' type 156 of course delivery method 154 or it could be a 'distance learning' type 158 of course delivery method 154.

If the 'closed' complete course 'course delivery method' 154 is a 'classroom delivery' type 156 of figure 20, the program director 96 in figure 20 will determine if the closed course is accredited or non-credit, figure 21. The Director of Curriculum 102 of figure 21 could be notified (if the closed course is accredited) for reserving a place for the entire new closed course, block 110 in figure 21. On the other hand, the "NExT" Administration manager 118 of figure 21 is notified (if the closed course is for non-credit) for reserving a place for the entire new closed course, block 120 in figure 21.

If the 'closed' course 'course delivery method' 154 is a 'distance learning' type 158 of figure 20, the Director of Curriculum for Distance Learning, block 160 of figure 20, is notified.

If the 'closed course' does not exist in the "NExT" Curriculum Library, the Director of Curriculum for Distance Learning 160 must work with the Director of Curriculum of the appropriate technology, block 162 of figure 20 to develop the course (see 'develop course' output from block 160 in figure 20). The Director of Curriculum of the appropriate technology 162 must actually produce the course via the Course Production Team, block 164 of figure 20, in the same manner as discussed above with reference to block 76 "Course Production Team", wherein industry 32 provided an input to the Course Production Team 76 by providing subject matter experts or instructional designers or graphic artists or programmers or quality assurance. When the aforementioned 'closed course distance learning course' is produced via the Course Production Team (164 in figure 20 and 76 in figure 19), that 'closed course distance learning course' is saved and stored in the "NExT" Curriculum Library 166 in figure 20 (which is the same as the Curriculum Library 94 in figure 20).

If the 'closed course' does exist in the "NExT" Curriculum Library 94, see the output 173 from block 160 in figure 20 which leads to decision triangle 175 of figure 21 wherein the Director of Curriculum 160 will determine if the 'closed course' stored in the Curriculum Library 94 is accredited or non-credit. If the 'closed course' is accredited, the Director of Curriculum 160 will screen the applicant, block 177, retrieve the material from the Curriculum Library 179, register and invoice the student/applicant, and dispatch coursework to the client, block 181 of figure 21. At this point, a mentor 78a may be involved. If the 'closed course' is non-credit, the course is retrieved from the "NExT" Curriculum Library (94), block 183 of figure 21, the student is registered and invoiced, and the coursework is dispatched to the student/applicant, block 185 in figure 21.

In figure 20, the Program Director 96 is also responsible for organizing the 'course venue'. Therefore, the Program Director 96 can either organize the course venue at the client location for remote course delivery, block 168 of figure 20, or the Program Director 96 can organize the course venue at either a university location or a "NExT" location for course delivery, block 170 in figure 20.

In summary, the new method of training discussed above with reference to figures 19 through 21 addresses distance learning, classroom delivery, and distance learning again where there are individual bookings in closed course situations.

Referring to figures 22 and 29, a modification to a part of the flowchart of figure 19, which depicts the "NExT" new training method of the present invention, is illustrated in figure 22.

In figure 19, the Business Development Manager 84 reviews the course content and objectives, block 86, requested by the client 80 and either notifies the appropriate business segment 88 of industry (if the requested course relates to a proprietary service or product already used by industry) or, if the course requested by the client 80 is not a proprietary service or product, the Business Development Manager 84 notifies the appropriate Director of Curriculum (having the subject matter expertise requested by the client 80) at one of the universities in one of the countries in figure 18.

In figure 22, however, the Business Development Manager 84 will, instead, notify the Program Director 96, block 21 in figure 22, who will then conduct a "course feasibility analysis" (referring to subroutines BB and AA in figure 29) by contacting the appropriate Director of Curriculum, blocks 23 or 25 in figure 22, at the appropriate university (in figure 18) with the client training request.

In figure 29 which represents subroutine BB, start with block 27 where the Program Director 96 contacts the appropriate Director of Curriculum 23 or 25 (of figure 22) with the client's training request. The appropriate Director of Curriculum, block 29 in figure 29, determines if one of the deliverable courses, stored in the "NExT" Curriculum Library 94 in figure 20, are acceptable for the client's needs, block 31 in figure 29. If no (one of the deliverable courses stored in the "NExT" Curriculum Library 94 are not acceptable), the Director of Curriculum advises the Program Director 96, block 33 in figure 29, and, at this point, refer to figure 28 for "subroutine AA", which represents the "marketing/client interface".

In figure 28, the Program Director 96 advises the Business Development Manager (BDM) 84, block 43 in figure 28, and the BDM 84 contacts the client 80, block 45 in figure 28. The client 80 must make a business decision whether or not to proceed, block 47 in figure 28.

However, in figure 29, if yes (one of the deliverable courses stored in the "NExT" Curriculum Library 94 are acceptable), the Business Development Manager 84 will determine the pricing of the course stored in the Curriculum Library 94, block 35 in figure 29. If the price is acceptable, block 37 in figure 29, the Program Director 96 is advised, block 39 in figure 29; and, if not, any flexibility in the price is examined by the Business Development Manager 84, block 41 in figure 29. If there is flexibility in the price of the course, the Business Development Manager 84 determines that new price, block 35 in figure 29, and, if the new price is acceptable, block 37 in figure 29, the Program Director 96 is advised, block 39 in figure 29.

Referring to figure 23a, we have already discussed, with reference to figures 22 and 29, how the Program Director 96 in figure 20 (and block 21 in figure 22) conducts a course feasibility analysis (referring to subroutines BB and AA in figure 29) by contacting the appropriate Director of Curriculum (blocks 23 or 25 in figure 22) at the appropriate university (of figure 18) with the client's training request. However, with reference to figure 30, the Program Director 96 of figure 23a also arranges to contact the Peer Review Board for conducting an instructor certification process prior to determining if the course 98 of figure 21 is accredited 100 or non-credit and prior to screening the applicant 104 of figure 21. Refer now to figure 30 for a flowchart of the Peer Review Board's instructor certification process.

Referring to figure 30, the Peer Review Board instruction certification process is illustrated. In figure 30, the Director of Curriculum requests instructor candidates from the "NExT" partners, such as industry, block 49 in figure 30. In response, the "NExT" partners and/or industry sends a list of their potential instructor candidates, block 51 in figure 30. Then, the Director of Curriculum circulates 'information' regarding the names of potential instructor candidates to Peer Review Board members, block 53 in figure 30. The Peer Review Board then performs its audit of each of the instructor candidates listed in the circulated information in accordance with a set of specifications set forth in a course work presenter requirements

document, block 55 in figure 30. Does each candidate meet the criteria, block 57 in figure 30? If yes, the Program Director 96 is advised, block 59 of figure 30, the Program Director 96 issues a certification letter, block 61 of figure 30, and the Program Director updates the approved instructor's list, block 63 in figure 30. If no, is candidate development possible, block 65 of figure 30? If not, that particular instructor candidate's consideration is terminated, block 71 of figure 30. If yes, however, the Peer Review Board will advise that particular instructor candidate regarding what additional skills are required, block 67 in figure 30, that instructor candidate undergoes a Presenter Development Program, block 69 of figure 30, and then that instructor candidate's name is placed among the other names on the 'information' circulated by the Director of Curriculum to the Peer Review Board members, block 53 in figure 30.

Referring to figure 23b and 24 through 30, in figure 23b, recall from block 76 in figure 19 that, if the course requested by the client 80 is not stored in the "NExT" Curriculum Library 94 of figure 20, the Director of Curriculum 90 in figure 19 puts together a "Course Production Team", block 76 in figure 19. The subsequent steps performed when the Director of Curriculum 90 puts together the Course Production Team are discussed below with reference to figures 23b, and 24 through 30 of the drawings.

In figure 23b, when the Course Production Team 76 of figure 19 is assembled to produce a new course, that new course will eventually be stored in the "NExT" Curriculum Library 94 of figure 20. In figure 23b, refer to block 73 in figure 23b. An output from block 76 leads to block 73 which indicates "Go to subroutine CC in figure 24a". Figures 24a-24b illustrate "subroutine CC" which relates to the "Peer Review Board Course Audit/Acceptance Process".

In figure 24a, therefore, when the Director of Curriculum is required to create a new course, enter Subroutine CC in figure 24a representing the Peer Review Board course audit/acceptance process. In figure 24a, the Course Production Team (block 76) requires a first entry into another subroutine, Subroutine DD, block 75 in figure 24,

which represents the Course Production Team course work planning/development process. Refer now to figure 25 which represents Subroutine DD.

In figure 25, the Course Production Team 76 has been alerted that a new course must be produced. The Course Production Team 76 looks at the project definition, they budget it, they plan it, and analyze the course making sure that the proposed new course is economically feasible and technically correct, block 75a in figure 25. The Course Production Team 76 produces an alpha evaluation and a prototype and they develop the course, block 75b in figure 25. At this time, the Course Production Team 76 gives the newly developed course to the Director of Curriculum for the Peer Review Board so that the Peer Review Board can audit the content of the newly developed course, block 75c in figure 25. Refer now to figure 24a, since Subroutine DD connects back to block 77 in figure 24a.

In figures 24a and 24b, referring initially to figure 24a, block 77 indicates that the Director of Curriculum for the Peer Review Board will audit the content of the newly developed course, block 77 in figure 24a. The Peer Review Board will either accept the newly developed course, or it will reject the newly developed course, block 79 in figure 24a. If the Peer Review Board rejects the newly developed course, the Peer Review Board revises the course proposal, block 81 in figure 24a, and a subject matter expert makes revisions to the newly developed course for the Peer Review Board, block 83 in figure 24a. If the Peer Review Board accepts the newly developed course, in figure 24b, they run an alpha test of the newly developed course (i.e., members of industry are present when the alpha test is performed), block 85 of figure 24b. The Peer Review Board will then send feedback information (i.e., the results of the alpha test) back to the Director of Curriculum, block 87 of figure 24b. The Director of Curriculum convenes the Peer Review Board to audit the 'results of the alpha test' (in the feedback information), block 89 in figure 24b. If any changes are required in the 'results of the alpha test', block 91 in figure 24b, those changes in the 'results' go back to the Course Production Team, block 93 in figure 24b. At this point, we enter Subroutine DD in figure 25 once again, a second alpha test is performed, and, hopefully, no further changes are required in the course. However, if

no changes are required in the 'results of the alpha test', block 91 in figure 24b, the Business Development Manger is advised, block 95 in figure 24b. The newly developed course is stored in the "NExT" Curriculum Library (94 of figure 20), block 97 in figure 24b, and the newly developed course is also published in a course catalog and is used for sales.

Refer now to figure 26a and locate block 95 which indicates "Point A Next Business Development Manager". Block 95 of figure 24b ("Advise Next Business Development Manager") is the same block as block 95 of figure 26a ("Point A Next Business Development Manager").

In figure 26a, locate block 95 ("Point A Next Business Development Manager"). The output of block 95 of figure 26a (the Next Business Development Manager) points to Subroutine AA, block 99 in figure 26a. Refer now to figure 28, which illustrates Subroutine AA. Subroutine AA represents the marketing/client interface.

In figures 26a and 28, referring initially to figure 26a, locate the Business Development Manager (BDM) 95 in figure 26a and note that the next step from the BDM 95 is block 99 in figure 26a ("To Subroutine AA") which appears in figure 28. In figure 28, the BDM (43 in figure 28) communicates with the clients, block 45 in figure 28, to determine if the newly developed course is an appropriate course for "NExT". A business decision must now be made, block 47 in figure 28, whether the newly developed course is an appropriate course for "NExT". If the decision by the client is "no", the newly developed course is not an appropriate course for "NExT" and a reference is entered into a client database indicating that the client has requested this type of course, for future reference, block 103 in figure 28. However, if the decision by the client is "yes", the newly developed course is an appropriate course for "NExT". Therefore, we now enter the "product line of NExT course", block 101 of figure 28, which is the same block as block 101 in figure 26a. Refer now to block 101 in figure 26a.

In figure 26a, block 101 indicates "product line of NExT course". Since the newly developed course is an appropriate course for "NExT", the Program Director 105 is advised, block 105 of figure 26a. The Program Director 105 must now undergo a feasibility analysis, which is Subroutine BB, block 107 in figure 26a. Refer now to figure 29 which represents Subroutine BB, "Course Feasibility Analysis".

In figure 29, which represents Subroutine BB "course feasibility analysis", start with block 27 where the Program Director 105 (96 in figure 22) contacts the appropriate Director of Curriculum (23 or 25 in figure 22) with the client's training request, block 29 in figure 29. The appropriate Director of Curriculum, block 29, determines if one of the deliverable courses stored in the "NExT" Curriculum Library 94 in figure 20, such as the aforementioned newly developed course, is deliverable (e.g. is it acceptable for the client's needs?), block 31 in figure 29. In figure 29, if no (the newly developed course stored in the "NExT" Curriculum Library 94 is not deliverable – see block 31 in figure 29), the Director of Curriculum advises the Program Director 105 (96 in fig 22), block 33 in figure 29, and, at this point, refer to figure 28 for "subroutine AA", which represents the "marketing/client interface".

In figure 28, the Program Director 105 or 96 advises the Business Development Manager (BDM), block 43 in figure 28, and the BDM contacts the client, block 45 in figure 28. The client must make a business decision whether or not to proceed, block 47 in figure 28. If yes, enter block 101 in figure 28 (product line of NExT Course) which is the same block as block 101 in figure 26a. Block 101 in figure 26a leads to the "Program Director" in block 105 of figure 26a.

In figure 29, if yes (the newly developed course stored in the "NExT" Curriculum Library 94 is deliverable – see block 31 in figure 29), the Business Development Manager will determine the pricing of the course stored in the Curriculum Library 94, block 35 in figure 29. If the price is acceptable, block 37 in figure 29, the Program Director is advised, block 39 in figure 29. If not, any flexibility in the price is examined by the Business Development Manager, block 41 in figure 29. If there is flexibility in the price of the course, the Business Development Manager determines

that new price, block 35 in figure 29, and, if the new price is acceptable, block 37 in figure 29, the Program Director is advised, block 39 in figure 29. The Program Director, at this point, is the "Program Director" 105 in block 105 of figure 26a.

In figures 26a, 26b, 27a, and 27b, refer initially to figure 26a and locate block 105, the Program Director 105. The next block to consider is block 109 in figure 26a, that is, the "course type" 109. At this point, we have determined that: (1) the newly developed course is an appropriate course for "NExT", and (2) the newly developed course is also deliverable (i.e, the newly developed course is acceptable for the client's needs). In figure 26a, blocks 105 and 109, the Program Director 105 must decide the 'course type' of the newly developed course, block 109 in figure 26a; that is, is the newly developed course a 'distance learning' type of course or is the newly developed course a 'classroom delivery' type of course. If the newly developed course is either a 'distance learning' course or a 'classroom delivery' type of course, a decision must be made whether or not the newly developed course is viable, block 111 in figure 26b and 119 in figure 26a (block 111 for classroom type and block 119 for distance learning type). If the newly developed course is not viable, the Business Development Manager is advised, block 113 in figure 26b (for classroom) and block 121 in figure 26a (for distance learning). We now enter Subroutine AA (in figure 28), block 115 in figure 26b (for classroom) and block 123 in figure 26a (for distance learning) where the Business Development Manager is communicating with the client. If the newly developed course is viable (see block 119 in figure 26a and block 111 in figure 26b), then we must now ask "is the course available" in the "NExT" Curriculum Library (94 of figure 20) as either a 'classroom' type of course or a 'distance learning' type of course, block 117 in figure 26b. If the course is not available as either a 'classroom' type of course or a 'distance learning' type of course in the Curriculum Library (94 of figure 20), the appropriate Director of Curriculum is advised, block 125 in figure 26b. Therefore, course development is required (i.e., we must create a new course or revise an existing one), block 127 in figure 26b. As a result, we must now enter Subroutine CC and DD, already discussed with reference to figures 24a-24b and 25, block 129 in figure 26b, to allow the Peer Review Board and the Course Production Teams to establish new coursework. The newly established

coursework is then entered into the "NExT" Curriculum Library (94 in figure 20), block 131 in figure 26b. In block 131 of figure 26b, the requested course, requested by the client, is either already stored in the Curriculum Library, block 131 of figure 26b, or newly developed coursework has now been stored in the Curriculum Library, block 131 of figure 26b. When the course has been saved in the Curriculum Library, block 131, the Program Director 133 in figure 27a is notified. However, at this point, note in figure 26b that the client can opt for 'direct open course booking' via a web-site, block 135 in figure 26b. That 'direct open course booking' via the web-site goes to the "NExT" Administration Manager, block 137 in figure 27a, and the "NExT" Administration Manager goes to the Program Director, block 133 in figure 27a.

In figure 27a, the Program Director, block 133 in figure 27a, has the responsibility for setting up coursework that is distance learning or classroom coursework. The Program Director 133 must decide what type of 'course delivery method' is being used, block 139 in figure 27, i.e., is it a 'classroom delivery' or is it a 'distance learning' type of course delivery method? If it is 'distance learning', is it a 'degree curriculum' course, block 141 in figure 27a. If it is a 'degree curriculum' distance learning course, the Director of Curriculum for distance learning is notified, block 143 in figure 27a. If it is not a 'degree curriculum' distance learning course, the 'on-line registration and delivery' method is implemented, block 145 in figure 27a. If it is not a 'distance learning' type of course delivery method, we must now enter Subroutine EE of figure 30, block 147 in figure 27a, Subroutine EE representing the Peer Review Board instructor certification process.

In figure 30, in Subroutine EE, the Director of Curriculum requests the names of coursework presenters/instructors from the "NExT" partners or from industry. The Director of Curriculum then sends the names of the candidates to the Peer Review Board, where the Peer Review Board will audit these potential candidates as presenters/instructors. The Peer Review Board will determine if the candidate meets the designated criteria. If the candidate does meet the criteria, the Peer Review Board will advise the Program Director, telling the Program Director the name of the candidate and indicating that the candidate will be the instructor of the course. The

Program Director gives the candidate a certification letter indicating that he has met the criteria of the 'quality assurance' checks in the audit process, and the Program Director updates the approved instructor's list. If the candidate does not meet the criteria of the audit process, we ask "what skills are missing" and "can we develop the candidate into an instructor through training". If the answer is no, the candidate is terminated. If the answer is yes, we develop a presenter development program for the candidate, at which point, the candidate goes back to the Peer Review Board for re-auditing.

In figures 27a and 27b, referring to block 27a and locating block 139, recall that, when a course has been saved in the "NexT" Curriculum Library or when a course was booked via 'direct open course booking', the Program Director 133 must decide what type of 'course delivery method' is being used, block 139 in figure 27a. That is, is it a 'classroom delivery' type of course delivery method? If it is a 'classroom delivery' type of 'course delivery method', the Program Director 133 must look at the venue, that is, is the location a client location or a university/NExT location, block 149 in figure 27a. Then, the Program Director 133 must decide, via block 151 in figure 27b, whether the course is accredited or non-accredited. If the course is non-accredited, the NExT Administration Manager 153 registers and invoices the student, block 153 in figure 27. Then, is the course a go/no go, block 155 in figure 27b. If the course is a no-go (a certain number of students must be present, otherwise, the course is a no-go), reschedule the student or refund any charges, block 157 in figure 27b. If the course is a 'go', retrieve the course from the "NExT" Curriculum Library, block 159 in figure 27b, and reserve the student's place in the course, block 161 in figure 27b. However, if the course is accredited, the appropriate Director of Curriculum, block 163 of figure 27b, screens the applicant, block 165 in figure 27b, because the applicant may not have the pre-requisites required for a degree accredited program. If the applicant is not acceptable, the applicant is rejected while recommending alternate courses, block 167 in figure 27b. If the applicant is acceptable, the NExT Administration Manager, block 169 in figure 27b, registers and invoices the student and reserves a place in the course for the student, block 171 in figure 27b.

In figure 7, now that the student has a place reserved for him/her in the above referenced course, during the performance of that course at the university location, the above referenced student will be taught the knowledge 52 and, in addition, the student will also be taught real-life industrial skills 56 as noted in figure 7. The knowledge 52 will be taught by using normal course study; however, the skills 56 will be taught by way of a plurality of simulation scenarios or programs which are provided by industry, as noted in figure 7. That is, industry will provide a plurality of simulation programs/scenarios to the university, and these simulation programs will be used during the performance of the course. The simulation programs will provide the student with real-life industrial experiences. As a result, the student will be taught "skills" in addition to "knowledge". When the student leaves the university setting, having learned the knowledge 52 and the skills 56, the student will be employed by industry, at which time, the former student/new employee will transfer his/her skill 56 into competence 60 by applying the newly acquired skills and by using a mentor. That is, a mentor will be assigned to the new employee when he/she is hired by industry, and the mentor will interface with the new employee and with the new employee's supervisor. The role of the mentor has already been discussed in detail the aforementioned 'Summary of the NExT new training method of the present invention'. As noted above, in order to acquire the competence 60 in figure 7, the new employee will apply his/her newly acquired skills by using a mentor; that is, the new employee will undergo additional training, where phase 1 is a CD-Rom based self study, phase 2 is a four week course at a learning center, and phase 3 is a five month mentor assisted program. When the competence 60 is acquired, the new employee will then acquire enhanced productivity 62 in figure 7 through and by way of innovation 64.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

WE CLAIM:

1. A method of training a set of prospective engineers attending a university to ensure that said engineers are learning a latest set of technology and a set of industrial skills prior to a graduation by said engineers from said university, comprising the steps of:

teaching said set of prospective engineers attending said university a basic set of knowledge, said prospective engineers attending a course at said university and learning said knowledge via normal course study;

teaching said set of prospective engineers attending said course at said university a set of industrial skills, the step of teaching said prospective engineers attending said course at said university said set of industrial skills including the steps of: running one or more simulation programs representing real-life industrial experiences at a location of said university and exposing said set of prospective engineers attending said course at said university to said real-life industrial experiences inherent in said simulation programs prior to a graduation of said prospective set of engineers from said university;

periodically auditing a quality of said course being taught at said university, said course being taught by an instructor; and

periodically auditing a quality of said instructor teaching said course at said university.

2. A method, responsive to a client's request, for training persons attending a university, comprising the steps of:

(a) booking a request from said client for training said persons;

(b) in response to the booking step (a), determining if a course is stored in a curriculum library and determining an instructor for said course;

(c) in response to the determining step (b), when said course is stored in said curriculum library, using said instructor to conduct said course when said persons are in attendance, the conducting step (c) including the steps of:

(c1) teaching said persons a basic set of knowledge via normal course study, and

(c2) teaching said persons real-life industrial skills when said persons are taught said basic set of knowledge, the teaching step (c2) further including the step of running a plurality of simulation programs and exposing said persons to a plurality of simulation scenarios which are inherent in said simulation programs, said simulation scenarios teaching said persons said real-life industrial skills; and

(d) periodically auditing, by a Peer Review Board, said course and said instructor when said course is being conducted during the conducting step (c), the auditing step (d) including the steps of:

(d1) determining if said course is teaching a latest set of technology, and

(d2) determining if said instructor is using an acceptable delivery method and if said instructor has an acceptable knowledge of said technology.

3. The method of claim 2, wherein the booking step (a), for booking by said client said request for training said persons, is selected from a group consisting of:

(a1) booking a course by contacting a Business Development Manager, said Business Development Manager determining if said course is related to a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) booking said course by accessing a training vendor's website to book said course, and

(a3) booking said course by e-mailing said training vendor to book said course.

4. The method of claim 2, wherein the determining step (b), for determining if said course is stored in said curriculum library, comprises the steps of:

(b1) developing and producing said course when said course is not stored in said curriculum library, and

(b2) storing said course in said curriculum library when the developing step (b1) is complete.

5. The method of claim 4, wherein said course, which has been developed and produced during the developing step (b1), will teach said persons said knowledge via said normal course study and said real-life industrial skills, said persons being taught said real-life industrial skills by exposing said persons to said plurality of simulation scenarios which are inherent in said simulation programs.

6. The method of claim 5, wherein the developing step (b1), for developing and producing said course when said course is not stored in said curriculum library, comprises the step of:

(b11) auditing and testing, by a Peer Review Board, said course when said course is developed and produced in response to the developing and producing step (b1), said course being stored in said curriculum library during the storing step (b2) when said Peer Review Board accepts said course in response to the auditing and testing step (b11).

7. The method of claim 6, wherein the booking step (a), for booking by said client said request for training said persons, is selected from a group consisting of:

(a1) booking a course by contacting a Business Development Manager, said Business Development Manager determining if said course is related to a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) booking said course by accessing a training vendor's website to book said course, and

(a3) booking said course by e-mailing said training vendor to book said course.

8. The method of claim 6, further comprising the steps of:

(e) teaching said persons a degree of competence when said persons are taught said real-life industrial skills in response to the teaching step (c2), the teaching step (e) including the steps of: (e1) assigning a mentor and a supervisor to each of said persons, and (e2) teaching said persons practical applications of said industrial skills, each of said persons interfacing with said mentor and said supervisor during the teaching step (e2).

9. The method of claim 8, wherein the booking step (a), for booking by said client said request for training said persons, is selected from a group consisting of:

(a1) booking a course by contacting a Business Development Manager, said Business Development Manager determining if said course is related to a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) booking said course by accessing a training vendor's website to book said course, and

(a3) booking said course by e-mailing said training vendor to book said course.

10. In a collaborative entity comprised of industry and one or more universities, a method of operating a training program, said industry providing one or more simulation programs to said one or more universities, said simulation programs each including one or more simulation scenarios indicative of real-life industrial experiences, said method comprising the steps of:

(a) transmitting a request, by a client, for training one or more persons to said collaborative entity, receiving said request in said collaborative entity, and booking said request by said collaborative entity;

(b) registering, by said collaborative entity, said persons in a training course to be conducted at said one or more universities;

(c) teaching, by said collaborative entity, said persons a set of knowledge when said persons are attending said training course at said one or more universities, the teaching step (c) being achieved through normal course study; and

(d) in response to the teaching step (c), teaching, by said collaborative entity, said persons a set of real-life industrial skills when said persons are attending said training course at said one or more universities, the teaching step (d) including the steps of running said one or more simulation programs provided by said industry at said one or more universities when said persons are attending said training course at said one or more universities, and exposing said persons to said one or more simulation scenarios of said simulation programs, said simulation scenarios being indicative of said real-life industrial experiences.

11. The method of operating said training program of claim 10, further comprising the steps of:

(e) registering, by said collaborative entity, said persons in a training course to be conducted at an industrial location and teaching said persons a degree of competence at said industrial location, the step of teaching said persons a degree of competence including the steps of: (e1) assigning a mentor to each of said persons, and (e2) requiring each of said persons to apply said set of industrial skills to an industrial problem, said mentor for said each of said persons assisting said each of said persons in the solution of said industrial problem.

12. The method of operating said training program of claim 11, wherein the requiring step (e2) comprises the steps of: (e21) sending to each of said persons a set of self study pre-course materials, (e22) sending each of said persons to a course in a classroom setting, and (e23) sending each of said persons to a mentor assisted self study course.

13. The method of operating said training program of claim 11, further comprising the steps of:

(f) auditing, by a Peer Review Board of said collaborative entity, said course being conducted at said one or more universities to ensure said course is teaching a latest set of technology, an instructor teaching said course, said instructor having a delivery method and having a knowledge of said latest set of technology; and

(g) auditing, by said Peer Review Board, said instructor teaching said course being conducted at said one or more universities to ensure said delivery method of said instructor and said knowledge of said latest set of technology of said instructor is acceptable to said Peer Review Board.

14. The method of operating said training program of claim 13, wherein the transmitting step (a), for transmitting a request for training said one or more persons from said client to said collaborative entity, is selected from a group consisting of:

(a1) transmitting said request by contacting a Business Development Manager of said collaborative entity, said Business Development Manager determining if a course is related to a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) transmitting said request by accessing the collaborative entity's website to book said course, and

(a3) transmitting said request by e-mailing said collaborative entity to book said course.

15. In a collaborative entity comprised of university and industry personnel which responds to a client request and which is adapted for training one or more persons associated with said client by requiring said persons to attend a course, a method of training said one or more persons associated with said client comprising the steps of:

(a) receiving, by a business development manager (BDM) associated with said collaborative entity, said client request and determining by said BDM a required content and a required set of objectives of said course in response to the client request;

(b) notifying, by said BDM, an appropriate director of curriculum in accordance with said content and said objectives of said course determined by said BDM;

(c) determining by said director of curriculum if said course is stored in a curriculum library;

(d) when said course is stored in said curriculum library, notifying, by said director of curriculum, a program director;

(e) determining, by said program director, if said course is accredited or non-credit;

(f) reserving a place for said persons in the accredited or the non-credit course; and

(g) training said persons when said persons attend said course, the training step (g) including the steps of: teaching said persons at a university location subject matter knowledge through normal course study, and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

16. The method of training of claim 15, wherein the notifying step (b) for notifying, by said business development manager (BDM), an appropriate director of curriculum in accordance with said content and said objectives of said course determined by said BDM, comprises the steps of:

(b1) notifying, by the BDM, a program director;

(b2) performing, by the program director, a course feasibility analysis;

(b3) performing, by the program director, a peer review board instructor certification process; and

(b4) notifying, by the program director, said appropriate director of curriculum in accordance with said content and said objectives of said course determined by said BDM.

17. The method of training of claim 15, further comprising:

(h) when said course is not stored in said curriculum library, notifying, by said director of curriculum, a course production team, and producing, by said course production team, a new course which is responsive to said client request; and

(i) when said new course is produced, storing said new course is said curriculum library.

18. The method of training of claim 17, further comprising:

when said new course is stored in said curriculum library, notifying, by said director of curriculum, said program director;

determining, by said program director, if said new course is accredited or non-credit;

reserving a place for said persons in the accredited or the non-credit new course; and

training said persons when said persons attend said new course by teaching said persons at a university location subject matter knowledge through normal course study and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

19. The method of training of claim 15, wherein said client request received by said BDM during the receiving step (a) comprises a request for a closed course complete class, said closed course not being a public offering and not being stored in said curriculum library, further comprising the steps of:

(h) notifying, by said BDM, an adminstration manager; and

(i) determining, by said administration manager, if said closed course is a classroom delivery type of course or a distance learning type of course;

20. The method of training of claim 19, wherein, when said closed course is a classroom delivery type of course:

notifying, by said adminstration manager, a program director;

determining, by said program director, if said closed course is accredited or non-credit;

reserving a place for said persons of said client in the accredited or the non-credit closed course; and

training said persons of said client when said persons attend said closed course by teaching said persons at a university location subject matter knowledge through normal course study and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

21. The method of training of claim 20, wherein, when said closed course is a distance learning type of course:

notifying, by said administration manager, a director of curriculum for distance learning;

determining, by said director of curriculum for distance learning, if said closed course is stored in a curriculum library;

notifying, by said director of curriculum for distance learning, a course production team when said closed course is not stored in said curriculum library, said course production team

producing said closed course and storing the newly produced closed course in said curriculum library;

determining, by said director of curriculum for distance learning, if said closed course is accredited or non-credit when said closed course is stored in said curriculum library;

screening, by said director of curriculum for distance learning, said one or more persons when said closed course is accredited, retrieving said closed course from said curriculum library, and dispatching said course to said one or more persons; and

retrieving, by said director of curriculum for distance learning, said closed course from said curriculum library when said closed course is non-credit and dispatching said course to said one or more persons.

22. The method of training of claim 15, wherein said client is adapted to transmit a direct open course booking request corresponding to an open course to said collaborative entity, said open course being stored in said curriculum library, said client transmitting said direct open course booking request to said collaborative entity by transmitting an e-mail to said collaborative entity or by interacting with a website belonging to said collaborative entity on an internet, further comprising the steps of:

(h) receiving, by an administration manager of said collaborative entity, said direct open course booking request from said client; and

(i) determining, by said administration manager, if said open course corresponding to said direct open course booking request from said client is a classroom delivery type of open course or a distance learning type of open course.

23. The method of training of claim 22, wherein, when said open course is a classroom delivery type of course:

notifying, by said adminstration manager, a program director;

determining, by said program director, if said open course is accredited or non-credit;

reserving a place for said persons of said client in the accredited or the non-credit open course; and

training said persons of said client when said persons attend said open course by teaching said persons at a university location subject matter knowledge through normal course study and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

24. The method of training of claim 23, wherein, when said open course is a distance learning type of course:

notifying, by said administration manager, a director of curriculum for distance learning;

determining, by said director of curriculum for distance learning, if said open course is accredited or non-credit;

screening, by said director of curriculum for distance learning, said one or more persons of said client when said open course is accredited, retrieving said open course from said curriculum library, and dispatching said open course to said one or more persons of said client: and

retrieving, by said director of curriculum for distance learning, said open course from said curriculum library when said open course is non-credit and dispatching said open course to said one or more persons of said client.

25. The method of training of claim 17, wherein the producing step (h), for producing by said course production team said new course which is responsive to said client request, comprises the steps of:

(h1) producing by said course production team a prototype new course;

(h2) auditing, by a director of curriculum for a peer review board, a content of said prototype new course;

(h3) revising the prototype new course when the director of curriculum for the peer review board fails to accept the prototype new course;

(h4) running a course alpha test when the director of curriculum for the peer review board accepts the prototype new course; and

(h5) advising the business development manager when no changes to the prototype new course are required.

26. The method of training of claim 25, wherein the producing step (h) further comprises the steps of:

(h6) communicating, by the business development manager, with the client to determine if the prototype new course is a valid course to be stored in the curriculum library;

(h7) storing the prototype new course in the curriculum library when the client decides said new course is said valid course, said prototype new course now being a new product line course; and

(h8) storing said prototype new course in a customer database reference when the client decides said new course is not said valid course.

27. The method of training of claim 26, wherein the producing step (h) further comprises the steps of:

(h9) advising, by the business development manager, a program director when the new product line course is stored in the curriculum library, said program director advising an appropriate director of curriculum that the new product line course is stored in the curriculum library in response to the client request;

(h10) determining, by the appropriate director of curriculum, if the new product line course is deliverable;

(h11) determining, by the business development manager, a pricing of the new product line course when the appropriate director of curriculum determines that the new product line course is deliverable;

(h12) determining, by the appropriate director of curriculum, if the pricing of the new product line course is acceptable; and

(h13) advising the program director when the appropriate director of curriculum determines that the pricing of the new product line course is acceptable.

28. The method of training of claim 27, wherein the producing step (h) further comprises the steps of:

(h14) determining, by the program director, whether the new product line course is a classroom delivery type of course or a distance learning type of course, and determining, by the program director, that the new product line course is viable and available in the curriculum library;

(h15) since said new product line course is stored in said curriculum library, determining, by said program director, a venue for said new product line course and determining if said new product line course is accredited or non-credit;

(h16) reserving a place for said persons of said client in the accredited or the non-credit new product line course; and

(h17) training said persons of said client when said persons attend said new product line course including the steps of: teaching said persons at a university location subject matter knowledge through normal course study, and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

29. The method of training of claim 16, wherein the performing step (b2), for performing by the program director said course feasibility analysis, comprises the steps of:

(b21) contacting, by said program director, a director of curriculum regarding said client request;

(b22) determining, by said director of curriculum, if said course stored in said curriculum library of step (d) is deliverable to the client;

(b23) if said course is not deliverable, contacting, by the director of curriculum, said program director;

(b24) if said course is deliverable, determining a pricing of said course;

(b25) if said pricing of said course is acceptable, advising said program director; and

(b26) if said pricing of said course is not acceptable, determining any flexibility in said pricing of said course and advising said program director of a new pricing of said course.

30. The method of training of claim 16, wherein the performing step (b3), for performing by said program director said peer review board instructor certification process, comprises the steps of:

(b31) contacting, by said program director, a director of curriculum regarding said client request;

(b32) requesting, by said director of curriculum from said collaborative entity, potential instructor candidates;

(b34) circulating, by said director of curriculum, said instructor candidates to a set of members of a peer review board;

(b35) determining, by said peer review board, if said instructor candidates meet established criteria;

(b36) developing one or more of said instructor candidates when said one or more of said instructor candidates do not meet said established criteria;

(b37) advising, by said peer review board, said program director of a set of names of said instructor candidates that meet said established criteria; and

(b38) issuing, by said program director, a certification letter to each of said instructor candidates that meet said established criteria, said program director updating an approved instructors list.

AMENDED CLAIMS
[received by the International Bureau on 12 march 2001 (12.03.01);
original claims 1-30 replaced by new claims 1-32 (15 pages)]

1. A method of training a set of prospective engineers attending a university to ensure that said engineers are learning a latest set of technology and a set of industrial skills prior to a graduation by said engineers from said university, comprising the steps of:

teaching said set of prospective engineers attending said university a basic set of knowledge, said prospective engineers attending a course at said university and learning said knowledge via normal course study;

teaching said set of prospective engineers attending said course at said university a set of industrial skills, the step of teaching said prospective engineers attending said course at said university said set of industrial skills including the steps of: running one or more simulation programs representing real-life industrial experiences at a location of said university and exposing said set of prospective engineers attending said course at said university to said real-life industrial experiences inherent in said simulation programs prior to a graduation of said prospective set of engineers from said university;

periodically auditing a quality of said course being taught at said university, said course being taught by an instructor; and

periodically auditing a quality of said instructor teaching said course at said university.

2. The method of training of claim 1, wherein the steps of periodically auditing a quality of said course and periodically auditing a quality of said instructor comprise the step of:

auditing, by a Peer Review Board, said quality of said course being taught at said university and said quality of said instructor teaching said course at said university to ensure that said quality of said course and said quality of said instructor are continuously maintained at an acceptably high level.

3. The method of training of claim 2, further comprising the step of:

periodically auditing, by an Industrial Advisory Board, said quality of said course being taught at said university and said quality of said instructor teaching said course at said university to ensure that said course and said instructor continue to meet a set of needs of industry.

4. A method, responsive to a client's request, for training persons attending a university, comprising the steps of:

(a) booking a request from said client for training said persons;

(b) in response to the booking step (a), determining if a course is stored in a curriculum library and determining an instructor for said course;

(c) in response to the determining step (b), when said course is stored in said curriculum library, using said instructor to conduct said course when said persons are in attendance, the conducting step (c) including the steps of:

(c1) teaching said persons a basic set of knowledge via normal course study, and

(c2) teaching said persons real-life industrial skills when said persons are taught said basic set of knowledge, the teaching step (c2) further including the step of running a plurality of simulation programs and exposing said persons to a plurality of simulation scenarios which are inherent in said simulation programs, said simulation scenarios teaching said persons said real-life industrial skills; and

(d) periodically auditing, by a Peer Review Board, said course and said instructor when said course is being conducted during the conducting step (c), the auditing step (d) including the steps of:

(d1) determining if said course is teaching a latest set of technology, and

(d2) determining if said instructor is using an acceptable delivery method and if said instructor has an acceptable knowledge of said technology.

5. The method of claim 4, wherein the booking step (a), for booking by said client said request for training said persons, is selected from a group consisting of:

(a1) booking a course by contacting a Business Development Manager, said Business Development Manager determining if said course is related to a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) booking said course by accessing a training vendor's website to book said course, and

(a3) booking said course by e-mailing said training vendor to book said course.

6. The method of claim 4, wherein the determining step (b), for determining if said course is stored in said curriculum library, comprises the steps of:

(b1) developing and producing said course when said course is not stored in said curriculum library, and

(b2) storing said course in said curriculum library when the developing step (b1) is complete.

7. The method of claim 6, wherein said course, which has been developed and produced during the developing step (b1), will teach said persons said knowledge via said normal course study and said real-life industrial skills, said persons being taught said real-life industrial skills by exposing said persons to said plurality of simulation scenarios which are inherent in said simulation programs.

8. The method of claim 7, wherein the developing step (b1), for developing and producing said course when said course is not stored in said curriculum library, comprises the step of:

(b11) auditing and testing, by a Peer Review Board, said course when said course is developed and produced in response to the developing and producing step (b1), said course being stored in said curriculum library during the storing step (b2) when said Peer Review Board accepts said course in response to the auditing and testing step (b11).

9. The method of claim 8, wherein the booking step (a), for booking by said client said request for training said persons, is selected from a group consisting of:

(a1) booking a course by contacting a Business Development Manager, said Business Development Manager determining if said course is related to a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) booking said course by accessing a training vendor's website to book said course, and

(a3) booking said course by e-mailing said training vendor to book said course.

10. The method of claim 8, further comprising the steps of:

(e) teaching said persons a degree of competence when said persons are taught said real-life industrial skills in response to the teaching step (c2), the teaching step (e) including the steps of: (e1) assigning a mentor and a supervisor to each of said persons, and (e2) teaching said persons practical applications of said industrial skills, each of said persons interfacing with said mentor and said supervisor during the teaching step (e2).

11. The method of claim 10, wherein the booking step (a), for booking by said client said request for training said persons, is selected from a group consisting of:

(a1) booking a course by contacting a Business Development Manager, said Business Development Manager determining if said course is related to a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) booking said course by accessing a training vendor's website to book said course, and

(a3) booking said course by e-mailing said training vendor to book said course.

12. In a collaborative entity comprised of industry and one or more universities, a method of operating a training program, said industry providing one or more simulation programs to said one or more universities, said simulation programs each including one or more simulation scenarios indicative of real-life industrial experiences, said method comprising the steps of:

(a) transmitting a request, by a client, for training one or more persons to said collaborative entity, receiving said request in said collaborative entity, and booking said request by said collaborative entity;

(b) registering, by said collaborative entity, said persons in a training course to be conducted at said one or more universities;

(c) teaching, by said collaborative entity, said persons a set of knowledge when said persons are attending said training course at said one or more universities, the teaching step (c) being achieved through normal course study; and

(d) in response to the teaching step (c), teaching, by said collaborative entity, said persons a set of real-life industrial skills when said persons are attending said training course at said one or more universities, the teaching step (d) including the steps of running said one or more simulation programs provided by said industry at said one or more universities when said persons are attending said training course at said one or more universities, and exposing said persons to said one or more simulation scenarios of said simulation programs, said simulation scenarios being indicative of said real-life industrial experiences.

13. The method of operating said training program of claim 12, further comprising the steps of:

(e) registering, by said collaborative entity, said persons in a training course to be conducted at an industrial location and teaching said persons a degree of competence at said industrial location, the step of teaching said persons a degree of competence including the steps of: (e1) assigning a mentor to each of said persons, and (e2) requiring each of said persons to apply said set of industrial skills to an industrial problem, said mentor for said each of said persons assisting said each of said persons in the solution of said industrial problem.

14. The method of operating said training program of claim 13, wherein the requiring step (e2) comprises the steps of: (e21) sending to each of said persons a set of self study pre-course materials, (e22) sending each of said persons to a course in a classroom setting, and (e23) sending each of said persons to a mentor assisted self study course.

15. The method of operating said training program of claim 13, further comprising the steps of:

(f) auditing, by a Peer Review Board of said collaborative entity, said course being conducted at said one or more universities to ensure said course is teaching a latest set of technology, an instructor teaching said course, said instructor having a delivery method and having a knowledge of said latest set of technology: and

(g) auditing, by said Peer Review Board, said instructor teaching said course being conducted at said one or more universities to ensure said delivery method of said instructor and said knowledge of said latest set of technology of said instructor is acceptable to said Peer Review Board.

16. The method of operating said training program of claim 15, wherein the transmitting step (a), for transmitting a request for training said one or more persons from said client to said collaborative entity, is selected from a group consisting of:

(a1) transmitting said request by contacting a Business Development Manager of said collaborative entity, said Business Development Manager determining if a course is related to

a proprietary service or product of a segment of industry and if said course is stored in a curriculum library,

(a2) transmitting said request by accessing the collaborative entity's website to book said course, and

(a3) transmitting said request by e-mailing said collaborative entity to book said course.

17. In a collaborative entity comprised of university and industry personnel which responds to a client request and which is adapted for training one or more persons associated with said client by requiring said persons to attend a course, a method of training said one or more persons associated with said client comprising the steps of:

(a) receiving, by a business development manager (BDM) associated with said collaborative entity, said client request and determining by said BDM a required content and a required set of objectives of said course in response to the client request;

(b) notifying, by said BDM, an appropriate director of curriculum in accordance with said content and said objectives of said course determined by said BDM;

(c) determining by said director of curriculum if said course is stored in a curriculum library;

(d) when said course is stored in said curriculum library, notifying, by said director of curriculum, a program director;

(e) determining, by said program director, if said course is accredited or non-credit;

(f) reserving a place for said persons in the accredited or the non-credit course; and

(g) training said persons when said persons attend said course, the training step (g) including the steps of: teaching said persons at a university location subject matter knowledge through

normal course study, and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

18. The method of training of claim 17, wherein the notifying step (b) for notifying, by said business development manager (BDM), an appropriate director of curriculum in accordance with said content and said objectives of said course determined by said BDM, comprises the steps of:

(b1) notifying, by the BDM, a program director;

(b2) performing, by the program director, a course feasibility analysis;

(b3) performing, by the program director, a peer review board instructor certification process; and

(b4) notifying, by the program director, said appropriate director of curriculum in accordance with said content and said objectives of said course determined by said BDM.

19. The method of training of claim 17, further comprising:

(h) when said course is not stored in said curriculum library, notifying, by said director of curriculum, a course production team, and producing, by said course production team, a new course which is responsive to said client request; and

(i) when said new course is produced, storing said new course is said curriculum library.

20. The method of training of claim 19, further comprising:

when said new course is stored in said curriculum library, notifying, by said director of curriculum, said program director;

determining, by said program director, if said new course is accredited or non-credit;

reserving a place for said persons in the accredited or the non-credit new course; and

training said persons when said persons attend said new course by teaching said persons at a university location subject matter knowledge through normal course study and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

21. The method of training of claim 17, wherein said client request received by said BDM during the receiving step (a) comprises a request for a closed course complete class, said closed course not being a public offering and not being stored in said curriculum library, further comprising the steps of:

(h) notifying, by said BDM, an adminstration manager; and

(i) determining, by said administration manager, if said closed course is a classroom delivery type of course or a distance learning type of course;

22. The method of training of claim 21, wherein, when said closed course is a classroom delivery type of course:

notifying, by said adminstration manager, a program director;

determining, by said program director, if said closed course is accredited or non-credit;

reserving a place for said persons of said client in the accredited or the non-credit closed course; and

training said persons of said client when said persons attend said closed course by teaching said persons at a university location subject matter knowledge through normal course study and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

23. The method of training of claim 22, wherein, when said closed course is a distance learning type of course:

notifying, by said administration manager, a director of curriculum for distance learning;

determining, by said director of curriculum for distance learning, if said closed course is stored in a curriculum library;

notifying, by said director of curriculum for distance learning, a course production team when said closed course is not stored in said curriculum library, said course production team producing said closed course and storing the newly produced closed course in said curriculum library;

determining, by said director of curriculum for distance learning, if said closed course is accredited or non-credit when said closed course is stored in said curriculum library;

screening, by said director of curriculum for distance learning, said one or more persons when said closed course is accredited, retrieving said closed course from said curriculum library, and dispatching said course to said one or more persons; and

retrieving, by said director of curriculum for distance learning, said closed course from said curriculum library when said closed course is non-credit and dispatching said course to said one or more persons.

24. The method of training of claim 17, wherein said client is adapted to transmit a direct open course booking request corresponding to an open course to said collaborative entity, said open course being stored in said curriculum library, said client transmitting said direct open course booking request to said collaborative entity by transmitting an e-mail to said collaborative entity or by interacting with a website belonging to said collaborative entity on an internet, further comprising the steps of:

(h) receiving, by an administration manager of said collaborative entity, said direct open course booking request from said client; and

(i) determining, by said administration manager, if said open course corresponding to said direct open course booking request from said client is a classroom delivery type of open course or a distance learning type of open course.

25. The method of training of claim 24, wherein, when said open course is a classroom delivery type of course:

notifying, by said adminstration manager, a program director;

determining, by said program director, if said open course is accredited or non-credit;

reserving a place for said persons of said client in the accredited or the non-credit open course; and

training said persons of said client when said persons attend said open course by teaching said persons at a university location subject matter knowledge through normal course study and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

26. The method of training of claim 25, wherein, when said open course is a distance learning type of course:

notifying, by said administration manager, a director of curriculum for distance learning;

determining, by said director of curriculum for distance learning, if said open course is accredited or non-credit;

screening, by said director of curriculum for distance learning, said one or more persons of said client when said open course is accredited, retrieving said open course from said

curriculum library, and dispatching said open course to said one or more persons of said client; and

retrieving, by said director of curriculum for distance learning, said open course from said curriculum library when said open course is non-credit and dispatching said open course to said one or more persons of said client.

27. The method of training of claim 19, wherein the producing step (h), for producing by said course production team said new course which is responsive to said client request, comprises the steps of:

(h1) producing by said course production team a prototype new course;

(h2) auditing, by a director of curriculum for a peer review board, a content of said prototype new course;

(h3) revising the prototype new course when the director of curriculum for the peer review board fails to accept the prototype new course;

(h4) running a course alpha test when the director of curriculum for the peer review board accepts the prototype new course; and

(h5) advising the business development manager when no changes to the prototype new course are required.

28. The method of training of claim 27, wherein the producing step (h) further comprises the steps of:

(h6) communicating, by the business development manager, with the client to determine if the prototype new course is a valid course to be stored in the curriculum library;

(h7) storing the prototype new course in the curriculum library when the client decides said new course is said valid course, said prototype new course now being a new product line course; and

(h8) storing said prototype new course in a customer database reference when the client decides said new course is not said valid course.

29. The method of training of claim 28, wherein the producing step (h) further comprises the steps of:

(h9) advising, by the business development manager, a program director when the new product line course is stored in the curriculum library, said program director advising an appropriate director of curriculum that the new product line course is stored in the curriculum library in response to the client request;

(h10) determining, by the appropriate director of curriculum, if the new product line course is deliverable;

(h11) determining, by the business development manager, a pricing of the new product line course when the appropriate director of curriculum determines that the new product line course is deliverable;

(h12) determining, by the appropriate director of curriculum, if the pricing of the new product line course is acceptable; and

(h13) advising the program director when the appropriate director of curriculum determines that the pricing of the new product line course is acceptable.

30. The method of training of claim 29, wherein the producing step (h) further comprises the steps of:

(h14) determining, by the program director. whether the new product line course is a classroom delivery type of course or a distance learning type of course, and determining, by the program director, that the new product line course is viable and available in the curriculum library;

(h15) since said new product line course is stored in said curriculum library, determining, by said program director, a venue for said new product line course and determining if said new product line course is accredited or non-credit;

(h16) reserving a place for said persons of said client in the accredited or the non-credit new product line course; and

(h17) training said persons of said client when said persons attend said new product line course including the steps of: teaching said persons at a university location subject matter knowledge through normal course study, and further teaching said persons at said university location real-life industrial skills by exposing said persons to one or more simulation scenarios.

31. The method of training of claim 18, wherein the performing step (b2), for performing by the program director said course feasibility analysis, comprises the steps of:

(b21) contacting, by said program director. a director of curriculum regarding said client request;

(b22) determining, by said director of curriculum, if said course stored in said curriculum library of step (d) is deliverable to the client;

(b23) if said course is not deliverable, contacting, by the director of curriculum, said program director;

(b24) if said course is deliverable. determining a pricing of said course;

(b25) if said pricing of said course is acceptable, advising said program director; and

(b26) if said pricing of said course is not acceptable, determining any flexibility in said pricing of said course and advising said program director of a new pricing of said course.

32. The method of training of claim 18, wherein the performing step (b3), for performing by said program director said peer review board instructor certification process, comprises the steps of:

(b31) contacting, by said program director, a director of curriculum regarding said client request;

(b32) requesting, by said director of curriculum from said collaborative entity, potential instructor candidates;

(b34) circulating, by said director of curriculum, said instructor candidates to a set of members of a peer review board;

(b35) determining, by said peer review board, if said instructor candidates meet established criteria;

(b36) developing one or more of said instructor candidates when said one or more of said instructor candidates do not meet said established criteria;

(b37) advising, by said peer review board, said program director of a set of names of said instructor candidates that meet said established criteria; and

(b38) issuing, by said program director, a certification letter to each of said instructor candidates that meet said established criteria, said program director updating an approved instructors list.

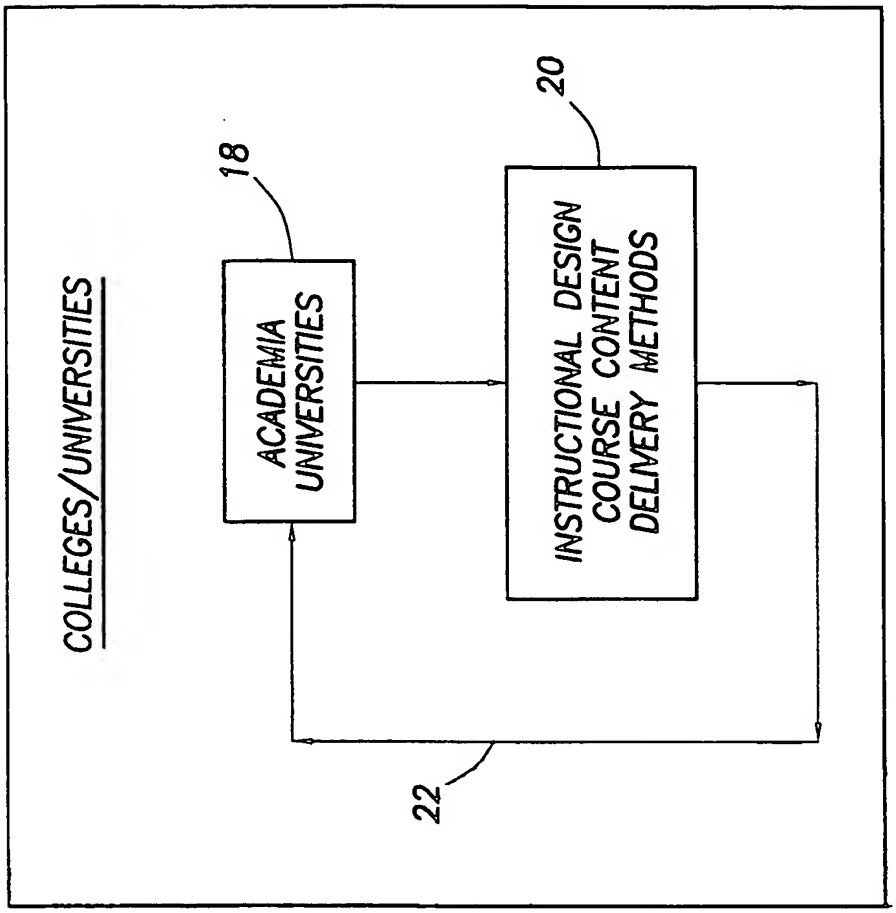


FIG. 2
(PRIOR ART)

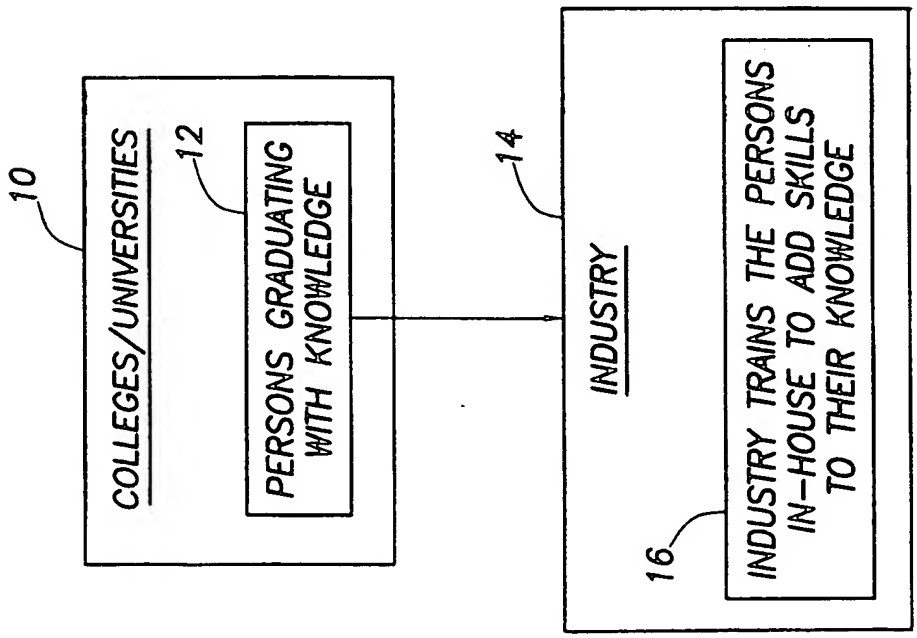


FIG. 1
(PRIOR ART)

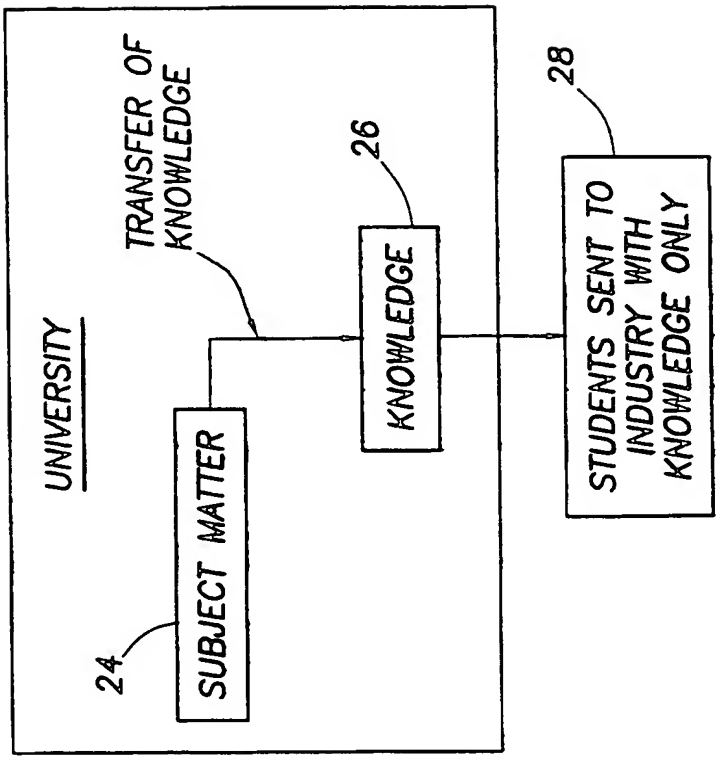


FIG. 3
(PRIOR ART)

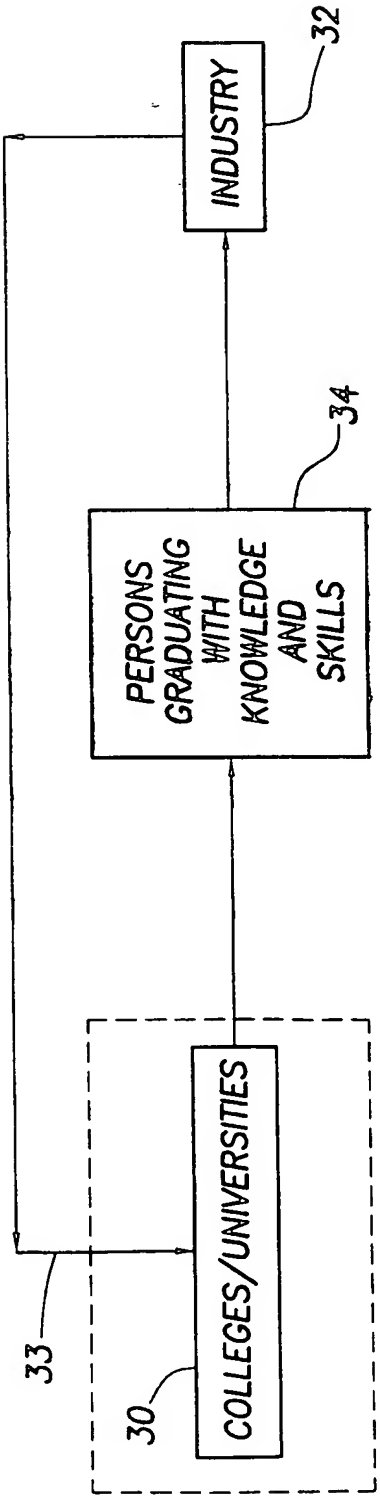


FIG. 4

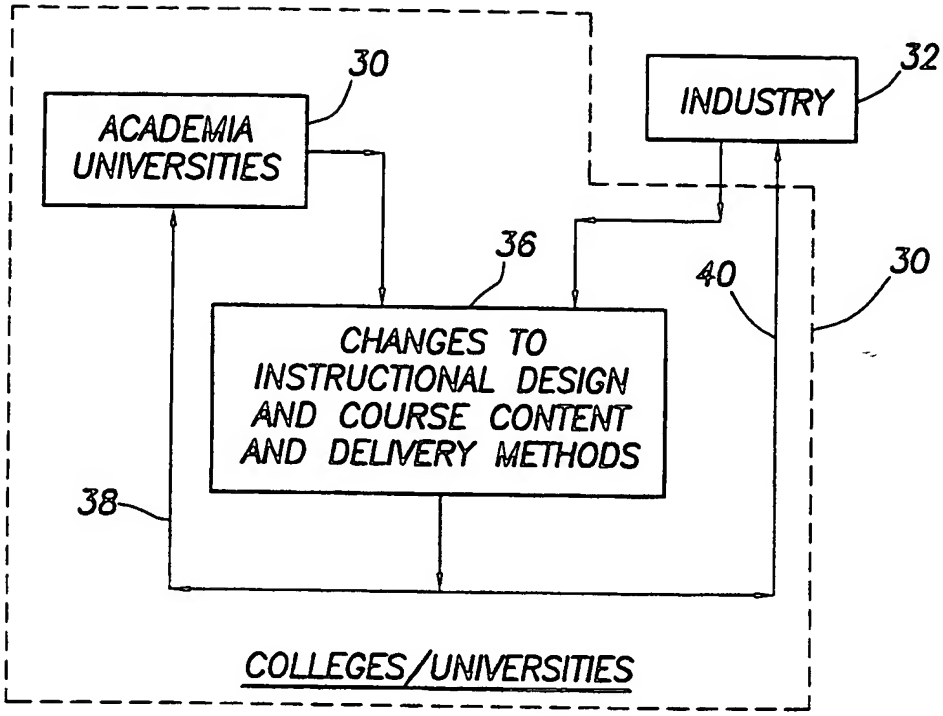

30
ACADEMIA UNIVERSITIES
32
INDUSTRY
36
40
30
CHANGES TO INSTRUCTIONAL DESIGN AND COURSE CONTENT AND DELIVERY METHODS
38
COLLEGES/UNIVERSITIES

FIG.5

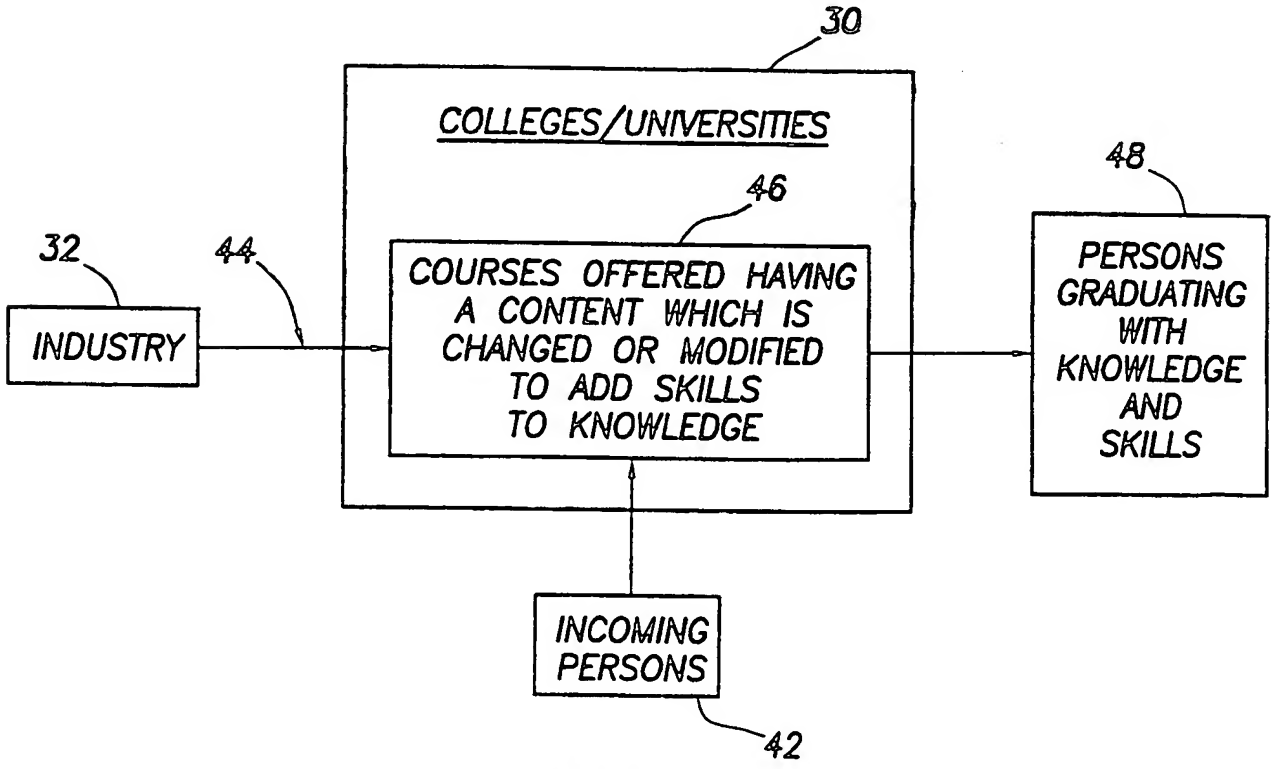

30
COLLEGES/UNIVERSITIES
46
48
32
44
INDUSTRY
COURSES OFFERED HAVING A CONTENT WHICH IS CHANGED OR MODIFIED TO ADD SKILLS TO KNOWLEDGE
PERSONS GRADUATING WITH KNOWLEDGE AND SKILLS
INCOMING PERSONS
42

FIG.6

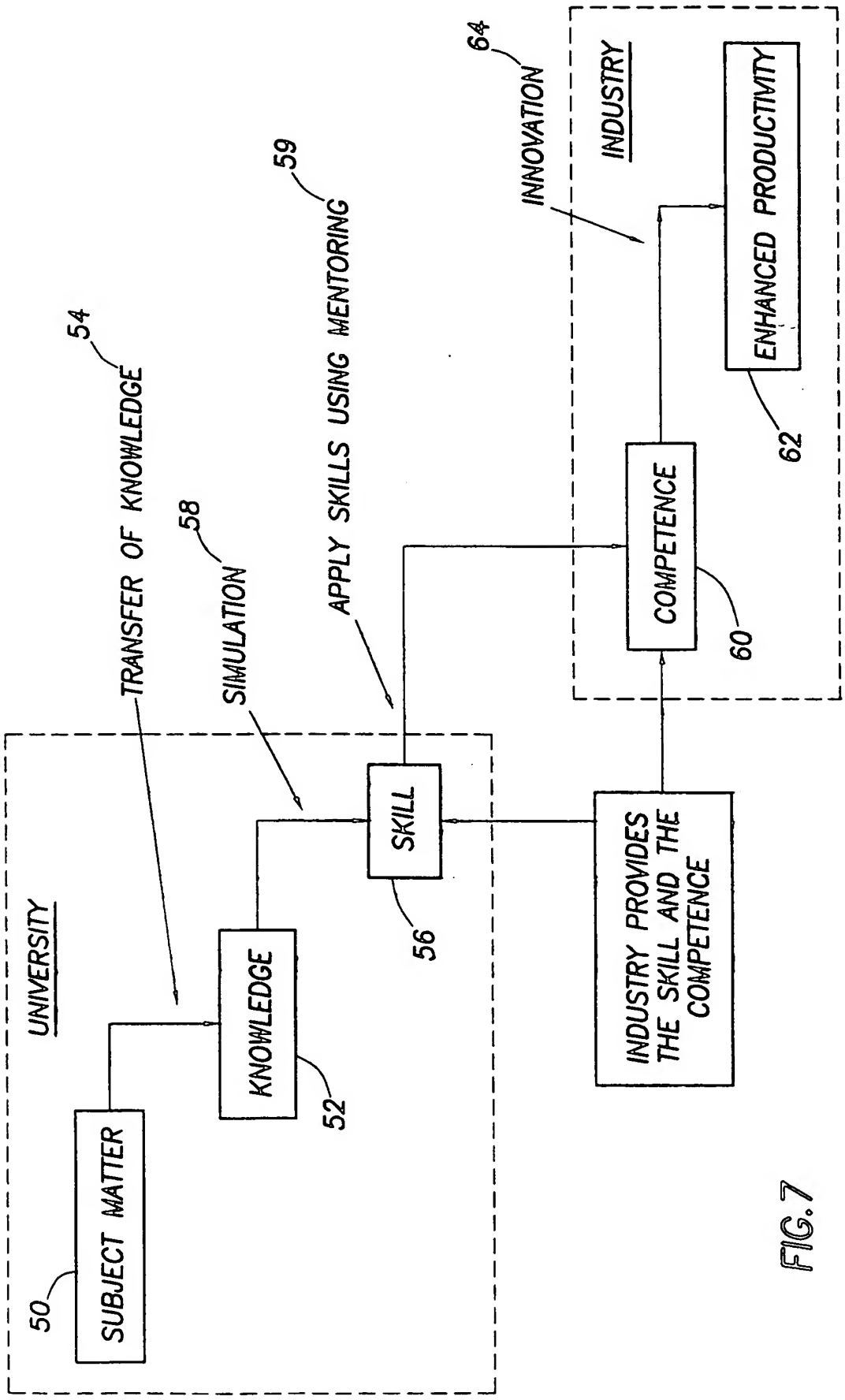

UNIVERSITY
SUBJECT MATTER
50
KNOWLEDGE
52
SKILL
56
TRANSFER OF KNOWLEDGE
54
SIMULATION
58
APPLY SKILLS USING MENTORING
59
INDUSTRY PROVIDES THE SKILL AND THE COMPETENCE
INDUSTRY
COMPETENCE
60
ENHANCED PRODUCTIVITY
62
INNOVATION
64

FIG. 7

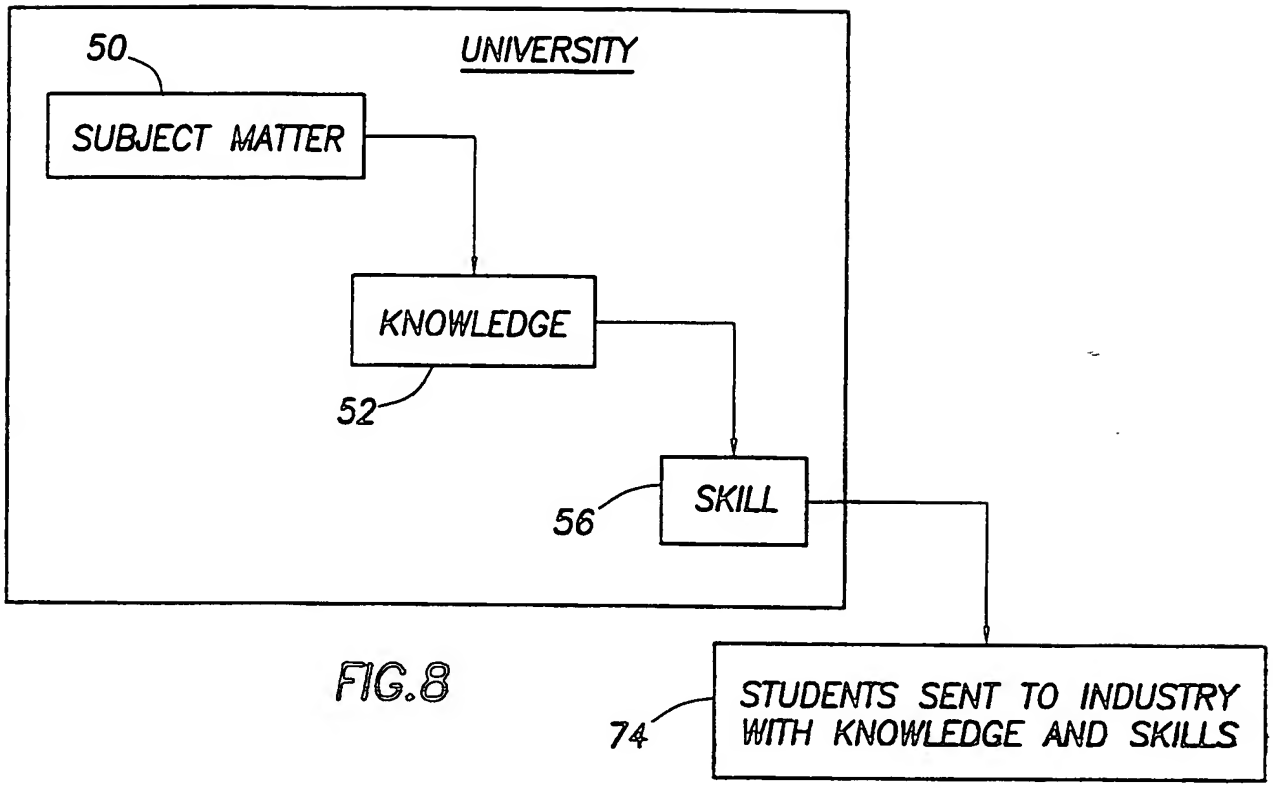

50
UNIVERSITY
SUBJECT MATTER
KNOWLEDGE
52
56
SKILL
74
STUDENTS SENT TO INDUSTRY WITH KNOWLEDGE AND SKILLS

FIG.8

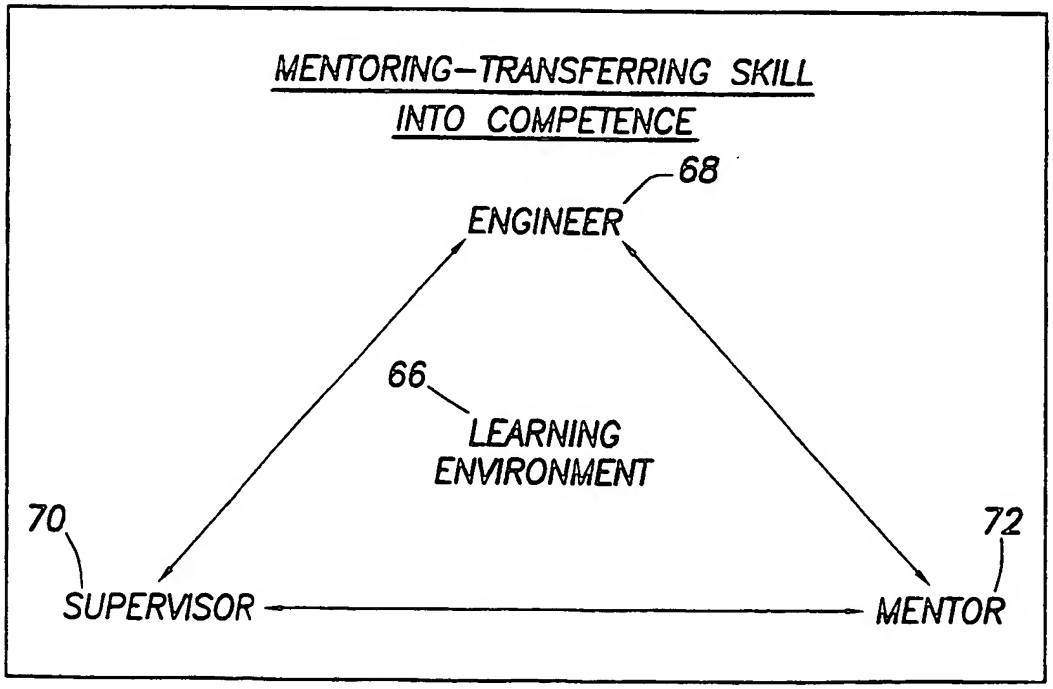

MENTORING–TRANSFERRING SKILL INTO COMPETENCE
68
ENGINEER
66
LEARNING ENVIRONMENT
70
SUPERVISOR
72
MENTOR

FIG.9

FIG. 10a

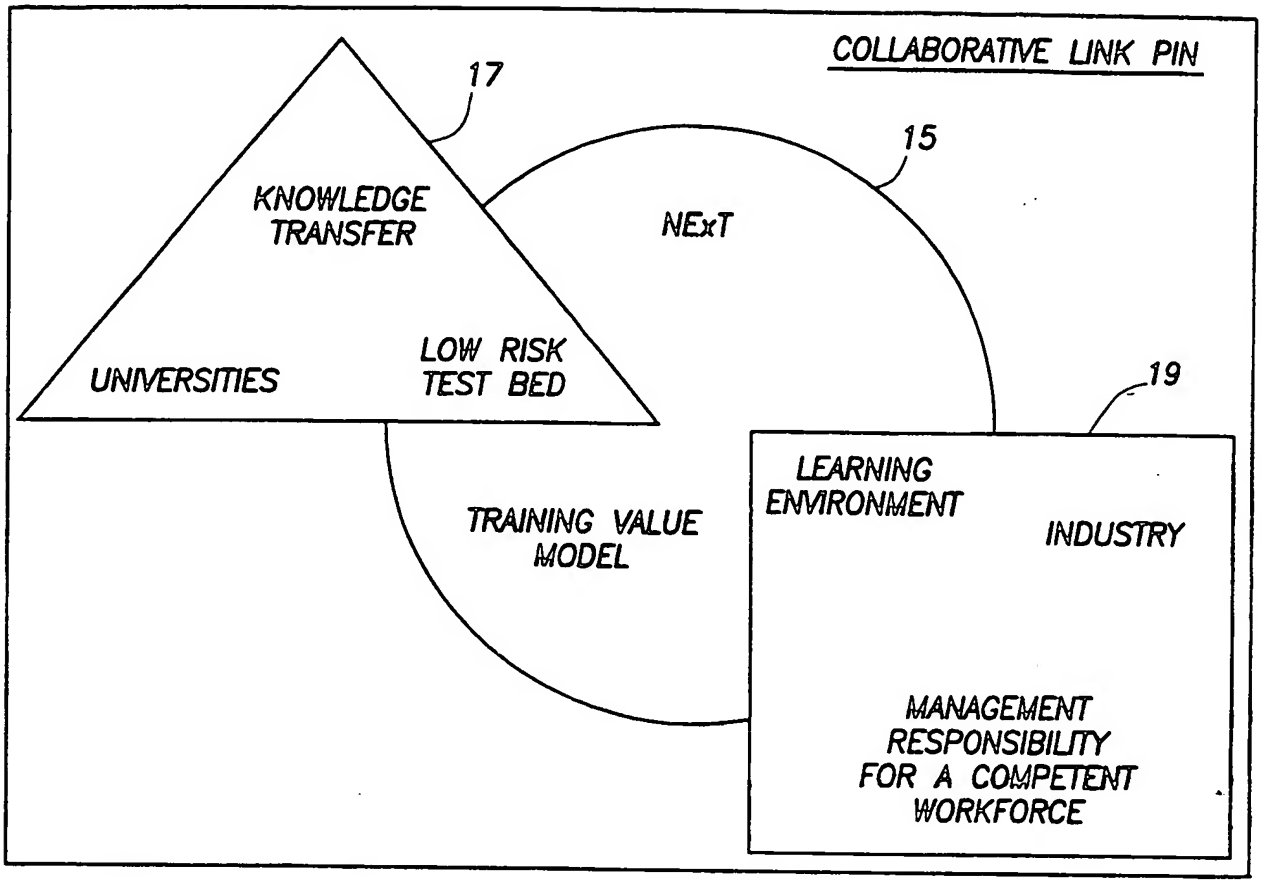


FIG. 10b

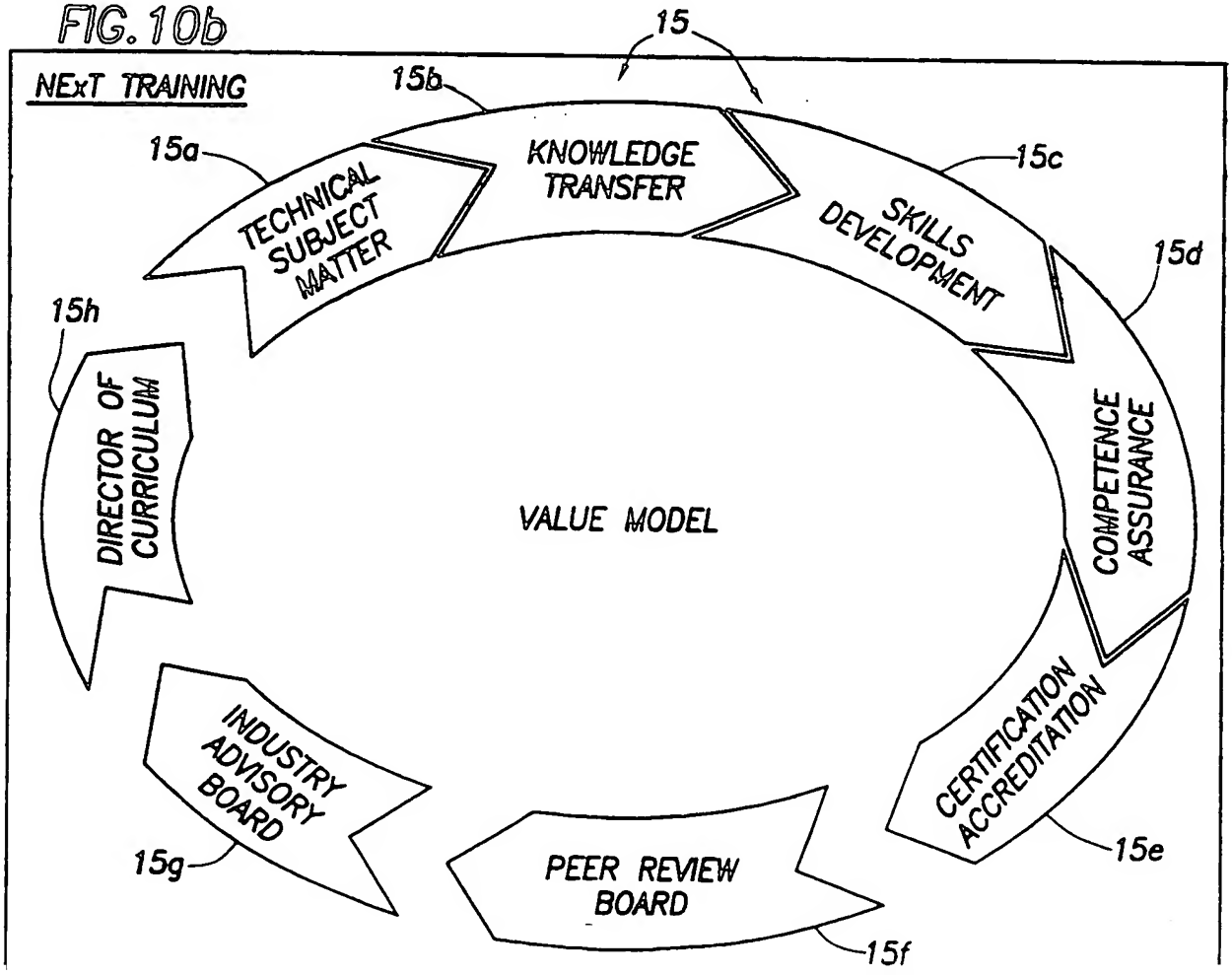


FIG. 11

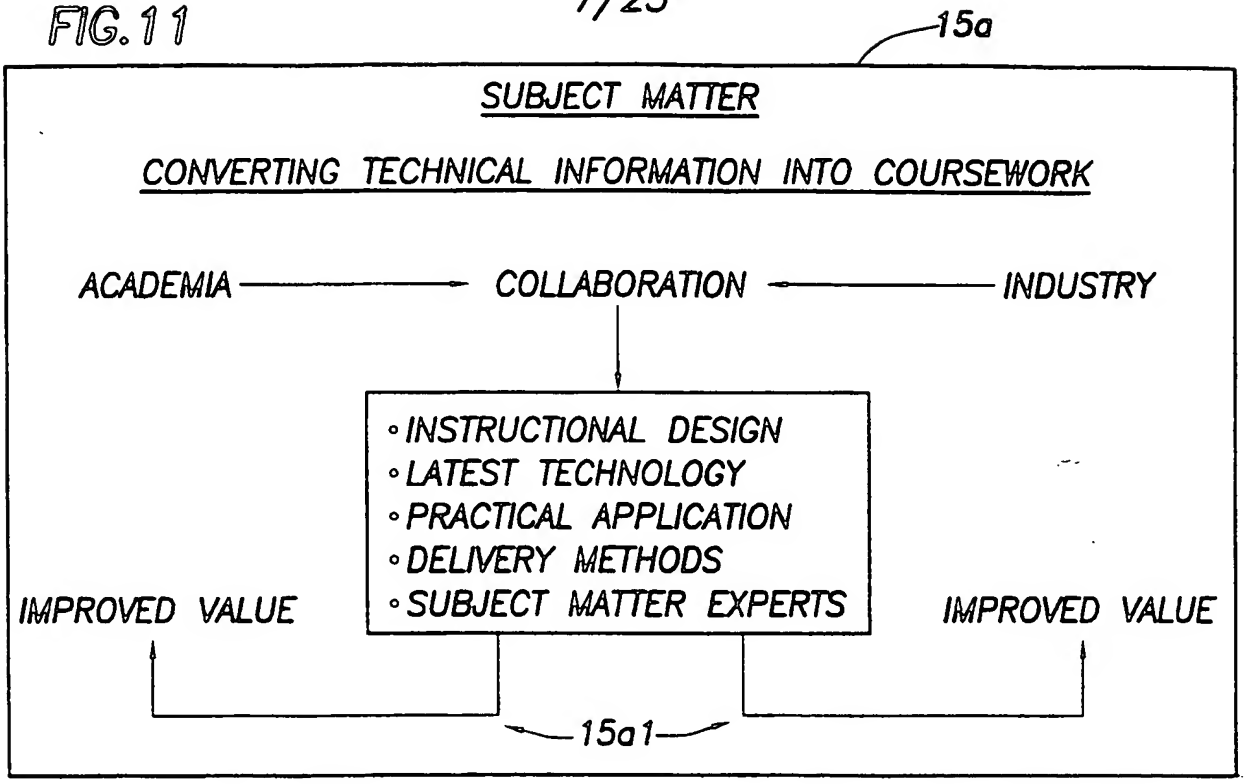


FIG. 12

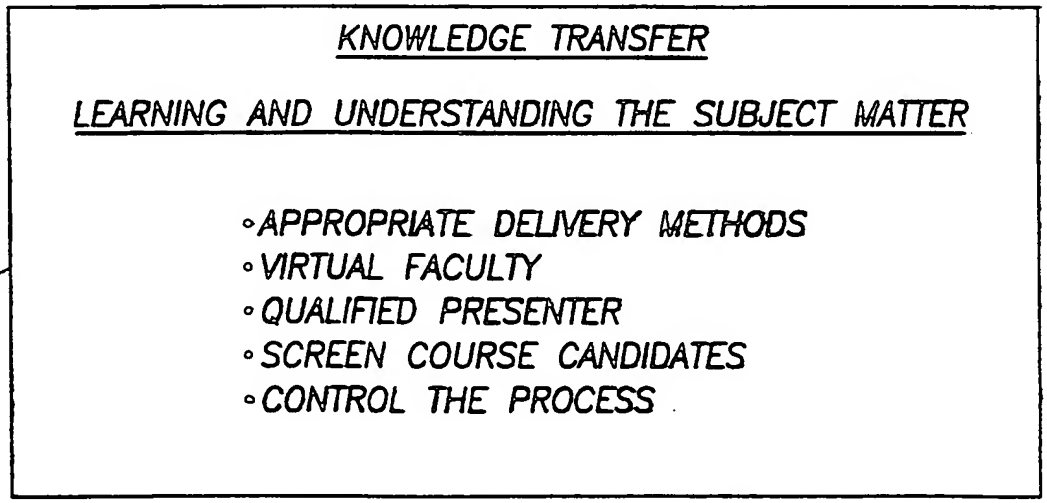


FIG. 13

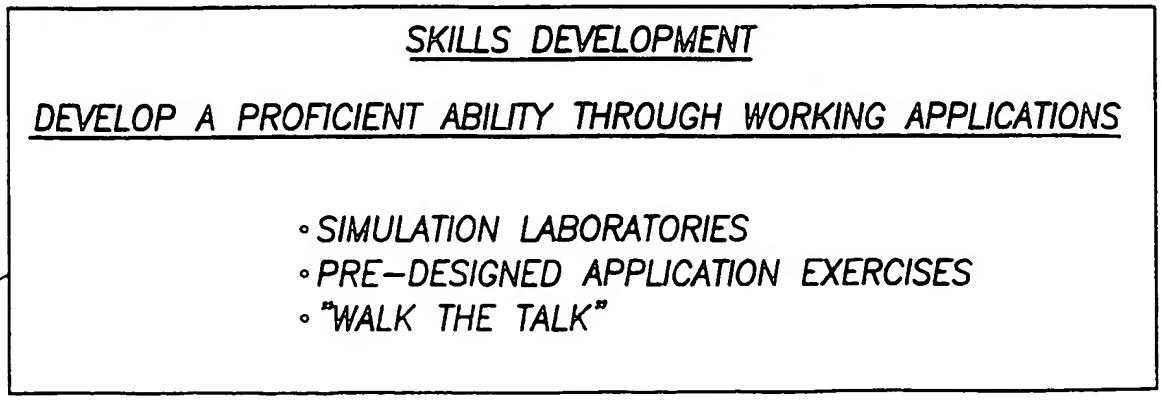


FIG. 14

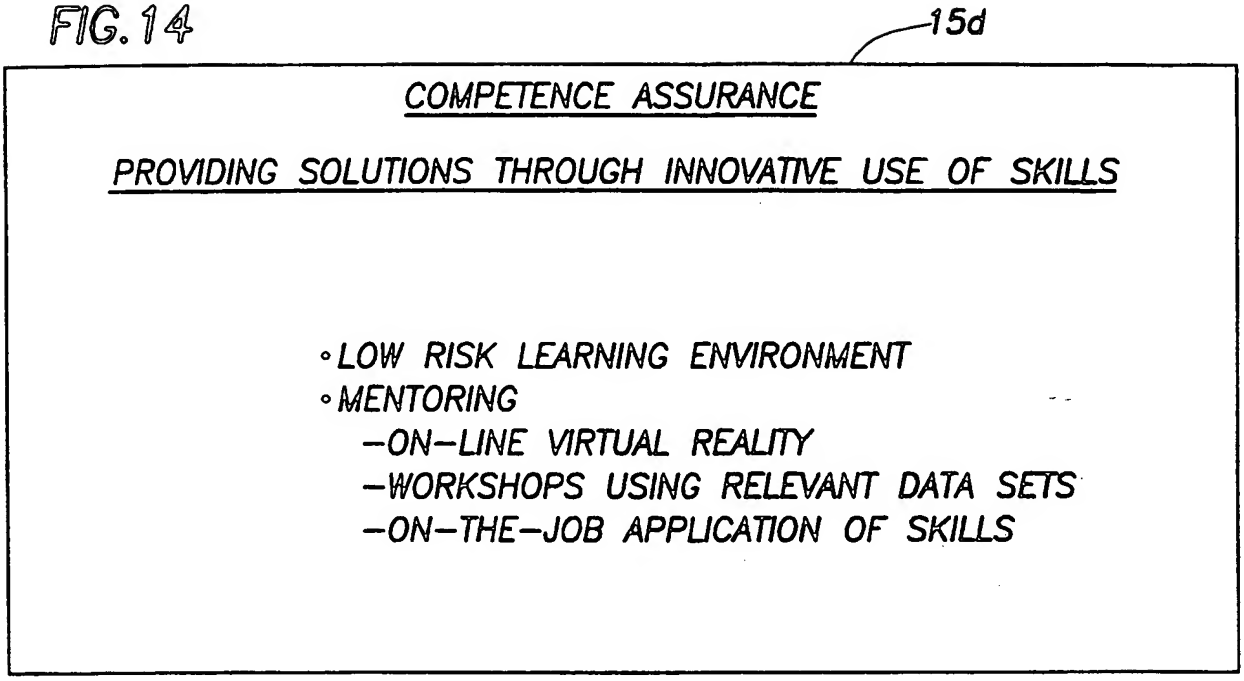

15d
COMPETENCE ASSURANCE
PROVIDING SOLUTIONS THROUGH INNOVATIVE USE OF SKILLS
◦ LOW RISK LEARNING ENVIRONMENT
◦ MENTORING
–ON–LINE VIRTUAL REALITY
–WORKSHOPS USING RELEVANT DATA SETS
–ON–THE–JOB APPLICATION OF SKILLS

FIG. 15

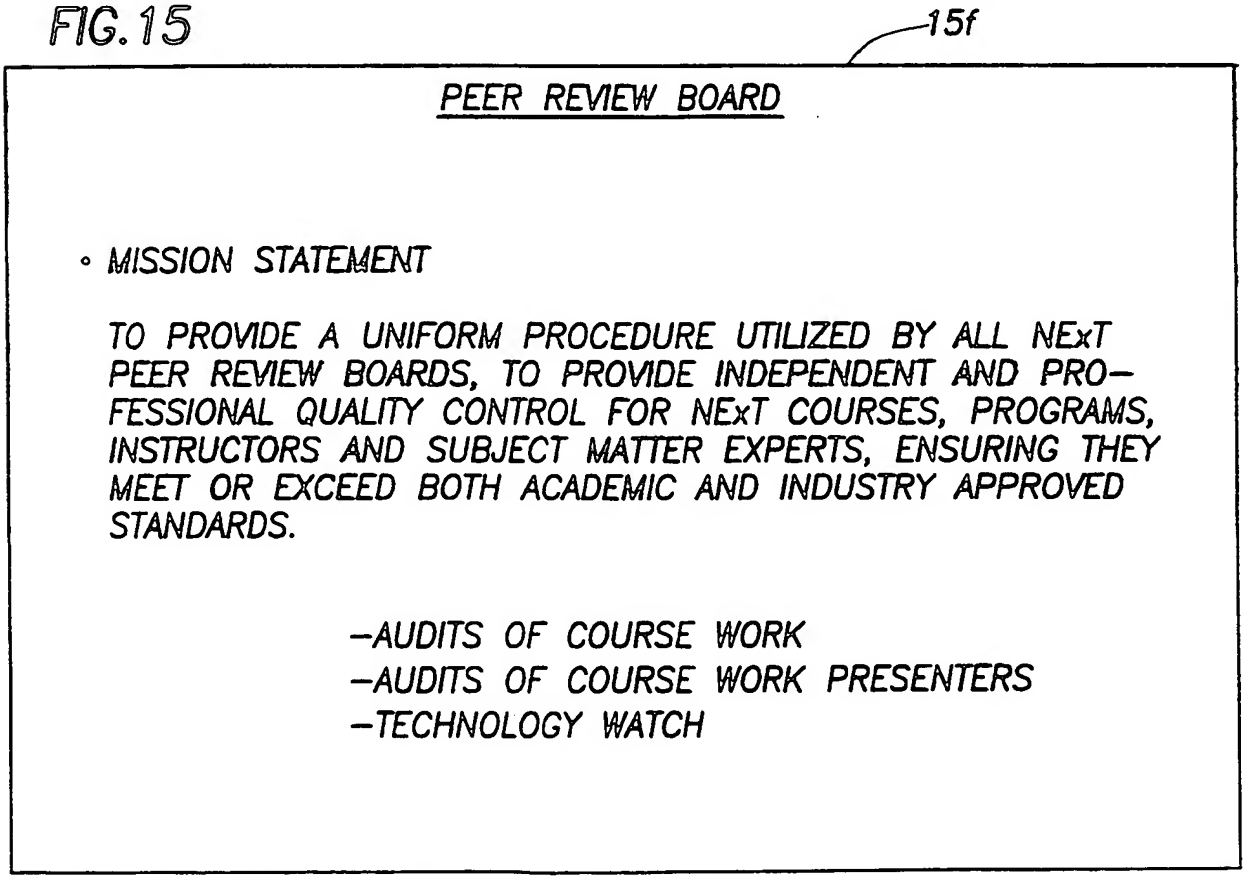

15f
PEER REVIEW BOARD
◦ MISSION STATEMENT
TO PROVIDE A UNIFORM PROCEDURE UTILIZED BY ALL NExT PEER REVIEW BOARDS, TO PROVIDE INDEPENDENT AND PRO–FESSIONAL QUALITY CONTROL FOR NExT COURSES, PROGRAMS, INSTRUCTORS AND SUBJECT MATTER EXPERTS, ENSURING THEY MEET OR EXCEED BOTH ACADEMIC AND INDUSTRY APPROVED STANDARDS.
–AUDITS OF COURSE WORK
–AUDITS OF COURSE WORK PRESENTERS
–TECHNOLOGY WATCH

FIG. 16

15g

INDUSTRY ADVISORY BOARD

- MISSION STATEMENT

ENSURE THAT NExT IS A NETWORK OF RECOGNIZED EXCELLENCE IN PETROLEUM INDUSTRY TRAINING PROVIDING THE TRANSFER OF LEADING EDGE AND ESTABLISHED TECHNOLOGY TO THE PETROLEUM INDUSTRY.

–4 REPRESENTATIVES FROM NExT PARTNERS
–7 REPRESENTATIVES FROM OIL COMPANIES

FIG. 17

INDUSTRY AND UNIVERSITY
THE "NExT" PARTNERS

INDUSTRY PERSONNEL	COMBINATION OF INDUSTRY AND UNIVERSITY PERSONNEL
DIRECTOR OF CURRICULUM	PEER REVIEW BOARD
PROGRAM DIRECTOR	INDUSTRIAL ADVISORY BOARD
"NExT" BUSINESS DEVELOPMENT MANAGER (BDM)	BOARD OF DIRECTORS

UNIVERSITY
FIRST COUNTRY–US
SECOND COUNTRY–SCOTLAND
THIRD COUNTRY

FIG. 18

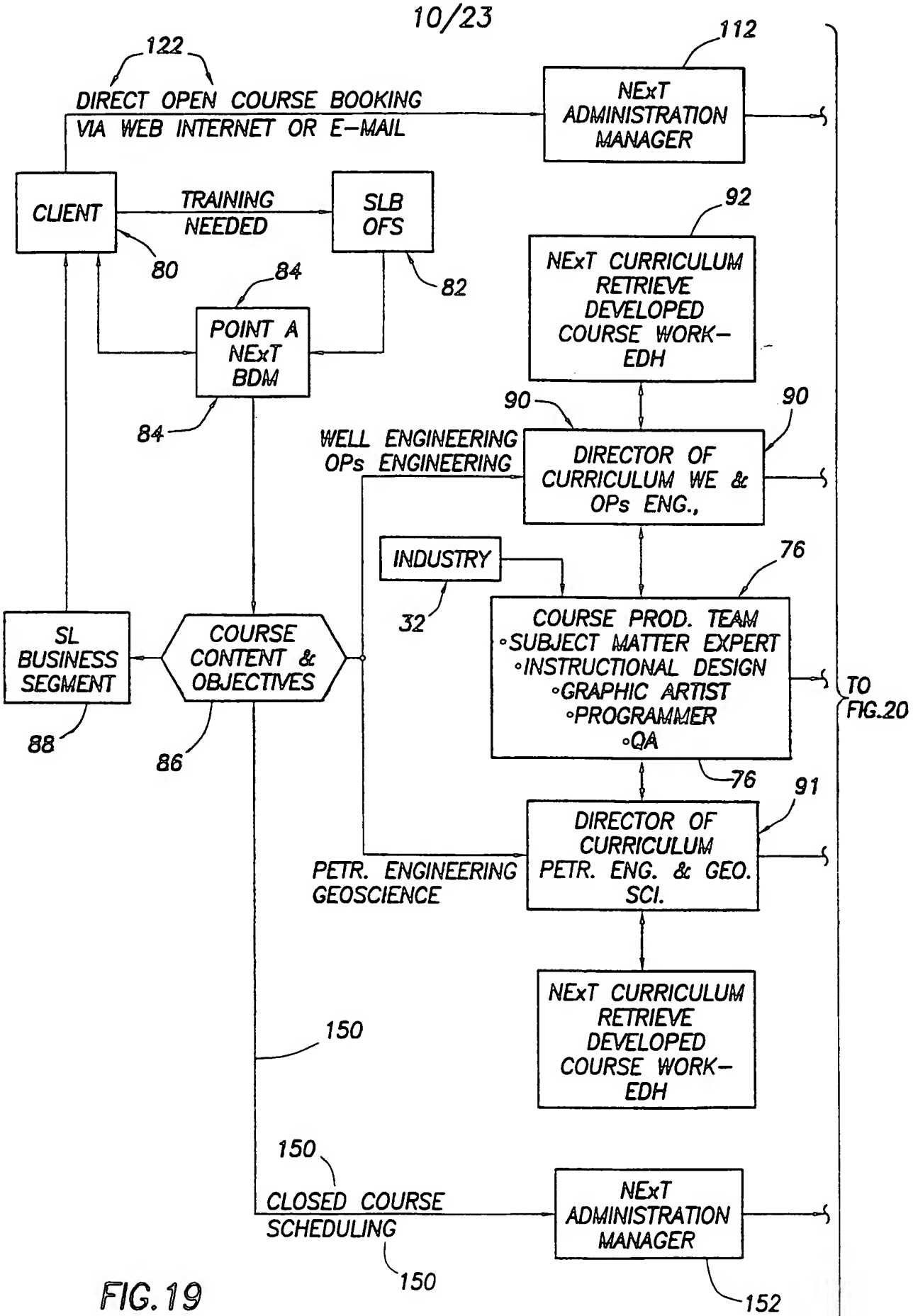

122
DIRECT OPEN COURSE BOOKING
VIA WEB INTERNET OR E-MAIL
112
NExT ADMINISTRATION MANAGER
CLIENT
TRAINING NEEDED
SLB OFS
80
82
92
NExT CURRICULUM RETRIEVE DEVELOPED COURSE WORK-EDH
84
POINT A NExT BDM
84
90
90
WELL ENGINEERING
OPs ENGINEERING
DIRECTOR OF CURRICULUM WE & OPs ENG.,
INDUSTRY
32
76
COURSE PROD. TEAM
◦SUBJECT MATTER EXPERT
◦INSTRUCTIONAL DESIGN
◦GRAPHIC ARTIST
◦PROGRAMMER
◦QA
SL BUSINESS SEGMENT
COURSE CONTENT & OBJECTIVES
88
86
TO FIG.20
76
91
DIRECTOR OF CURRICULUM PETR. ENG. & GEO. SCI.
PETR. ENGINEERING
GEOSCIENCE
NExT CURRICULUM RETRIEVE DEVELOPED COURSE WORK-EDH
150
150
CLOSED COURSE SCHEDULING
150
NExT ADMINISTRATION MANAGER
152

FIG. 19

FIG.20

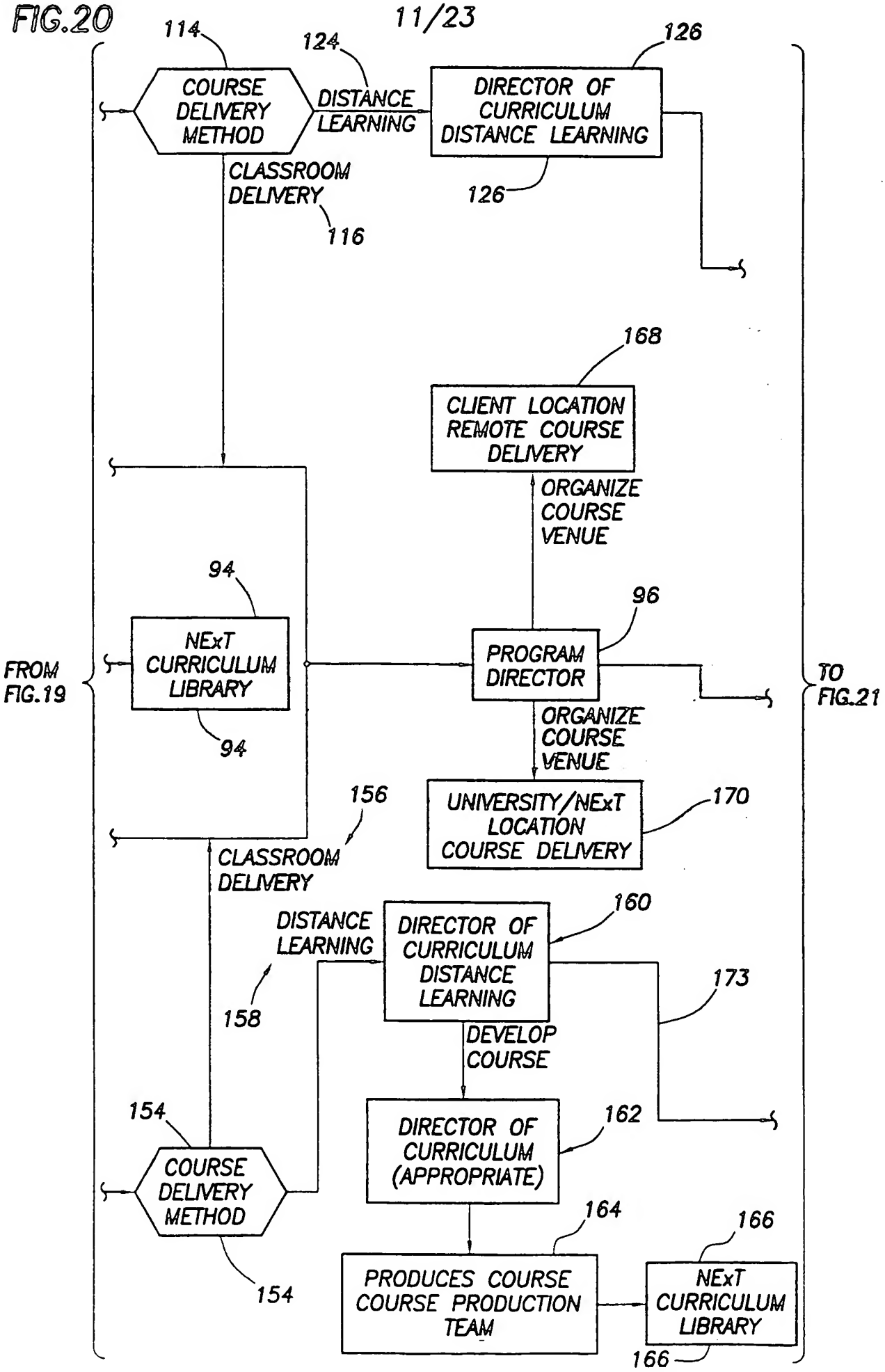

114
124
126
COURSE DELIVERY METHOD
DISTANCE LEARNING
DIRECTOR OF CURRICULUM DISTANCE LEARNING
126
CLASSROOM DELIVERY
116
168
CLIENT LOCATION REMOTE COURSE DELIVERY
ORGANIZE COURSE VENUE
94
96
FROM FIG.19
NExT CURRICULUM LIBRARY
PROGRAM DIRECTOR
TO FIG.21
94
ORGANIZE COURSE VENUE
156
170
UNIVERSITY/NExT LOCATION COURSE DELIVERY
CLASSROOM DELIVERY
160
DISTANCE LEARNING
DIRECTOR OF CURRICULUM DISTANCE LEARNING
158
173
DEVELOP COURSE
154
162
DIRECTOR OF CURRICULUM (APPROPRIATE)
COURSE DELIVERY METHOD
164
166
PRODUCES COURSE COURSE PRODUCTION TEAM
NExT CURRICULUM LIBRARY
154
166

FIG.21

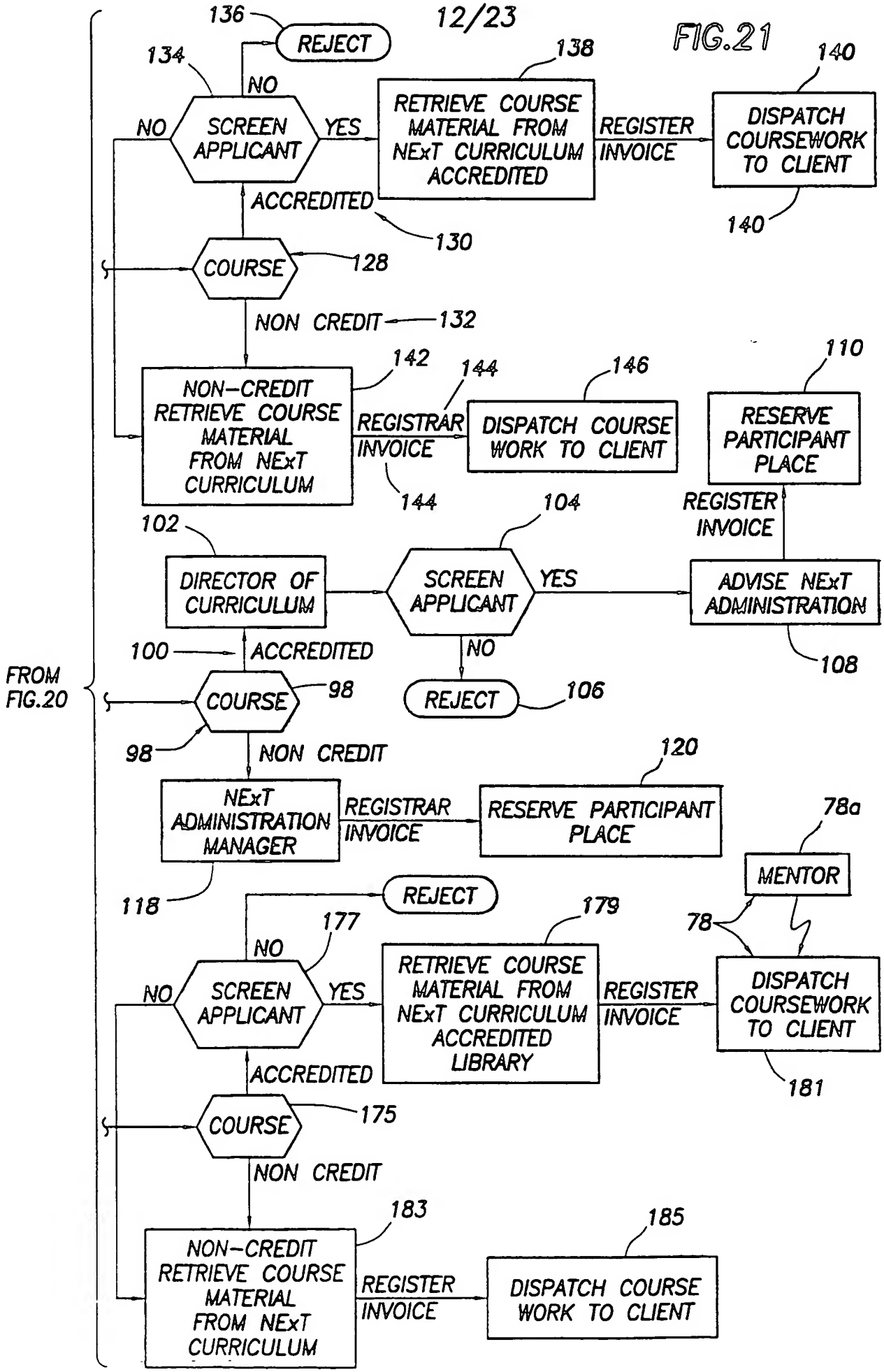

136
REJECT
134
NO
NO
SCREEN APPLICANT
YES
138
RETRIEVE COURSE MATERIAL FROM NExT CURRICULUM ACCREDITED
REGISTER INVOICE
140
DISPATCH COURSEWORK TO CLIENT
140
ACCREDITED
130
COURSE
128
NON CREDIT
132
142
NON-CREDIT RETRIEVE COURSE MATERIAL FROM NExT CURRICULUM
144
REGISTRAR INVOICE
144
146
DISPATCH COURSE WORK TO CLIENT
110
RESERVE PARTICIPANT PLACE
REGISTER INVOICE
102
DIRECTOR OF CURRICULUM
104
SCREEN APPLICANT
YES
ADVISE NExT ADMINISTRATION
108
100
ACCREDITED
NO
FROM FIG.20
COURSE
98
REJECT
106
98
NON CREDIT
120
NExT ADMINISTRATION MANAGER
REGISTRAR INVOICE
RESERVE PARTICIPANT PLACE
78a
MENTOR
118
REJECT
177
179
NO
NO
SCREEN APPLICANT
YES
RETRIEVE COURSE MATERIAL FROM NExT CURRICULUM ACCREDITED LIBRARY
REGISTER INVOICE
78
DISPATCH COURSEWORK TO CLIENT
181
ACCREDITED
COURSE
175
NON CREDIT
183
NON-CREDIT RETRIEVE COURSE MATERIAL FROM NExT CURRICULUM
REGISTER INVOICE
185
DISPATCH COURSE WORK TO CLIENT

FIG.22

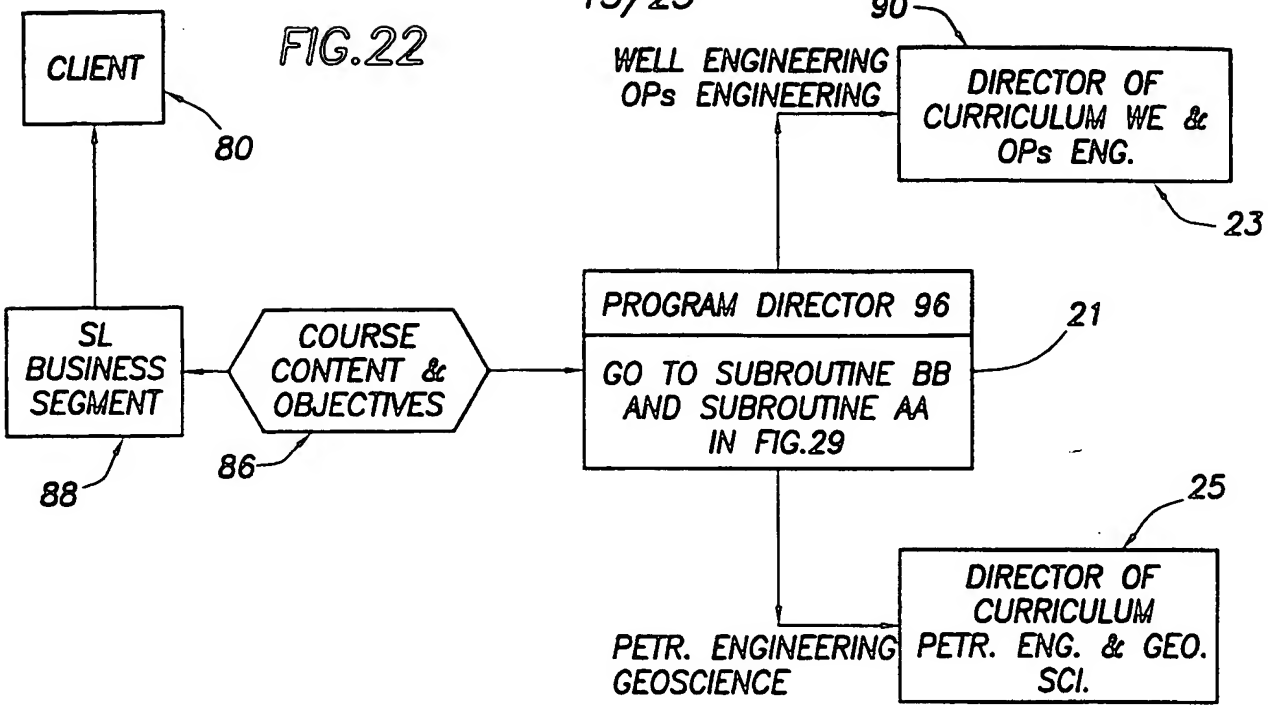


FIG.23a

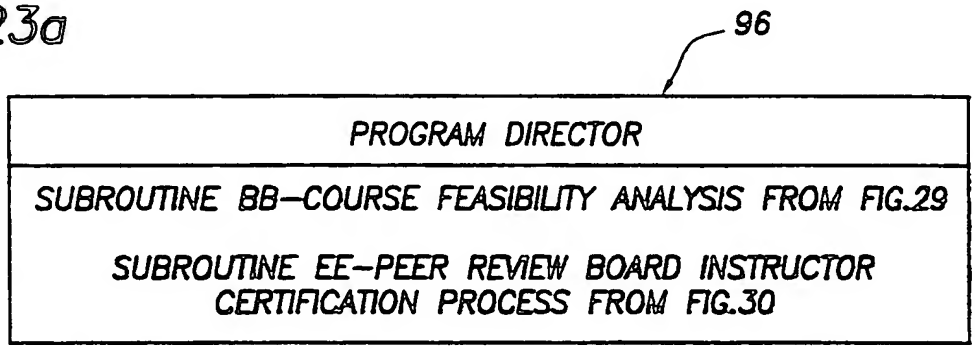
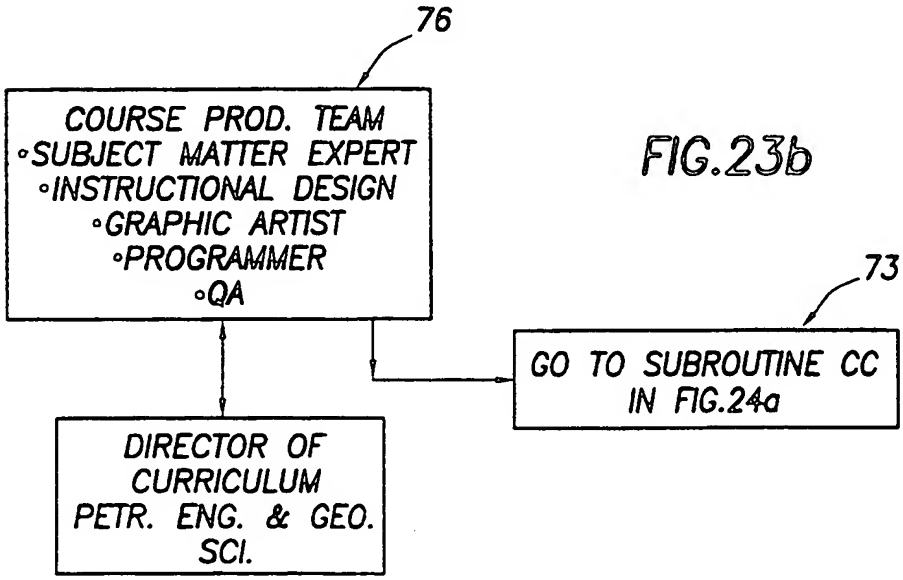


FIG.23b



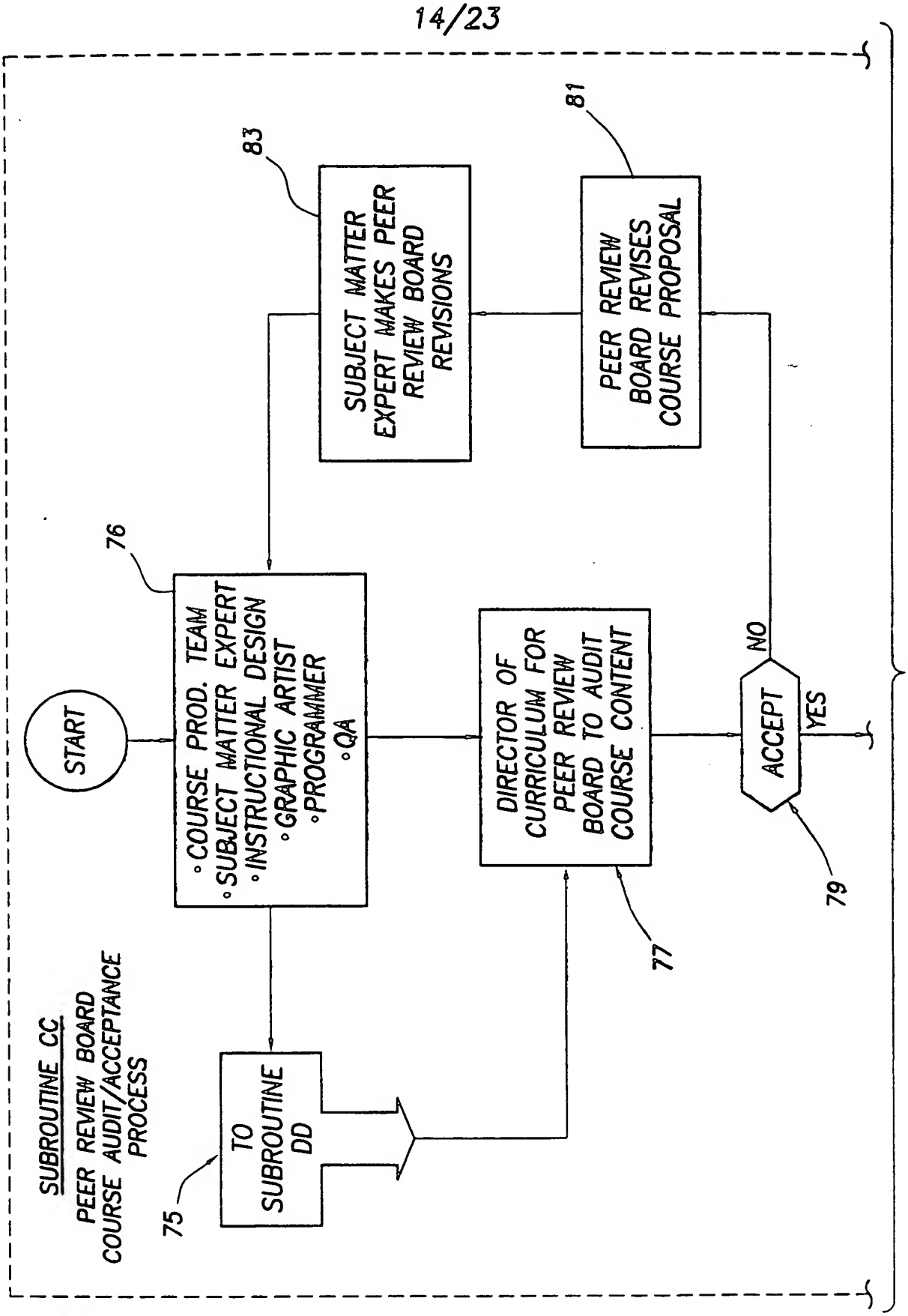

SUBROUTINE CC
PEER REVIEW BOARD
COURSE AUDIT/ACCEPTANCE
PROCESS
START
76
°COURSE PROD. TEAM
°SUBJECT MATTER EXPERT
°INSTRUCTIONAL DESIGN
°GRAPHIC ARTIST
°PROGRAMMER
°QA
83
SUBJECT MATTER EXPERT MAKES PEER REVIEW BOARD REVISIONS
81
PEER REVIEW BOARD REVISES COURSE PROPOSAL
DIRECTOR OF CURRICULUM FOR PEER REVIEW BOARD TO AUDIT COURSE CONTENT
77
ACCEPT
NO
YES
79
75
TO SUBROUTINE DD
TO FIG.24b

FIG.24a

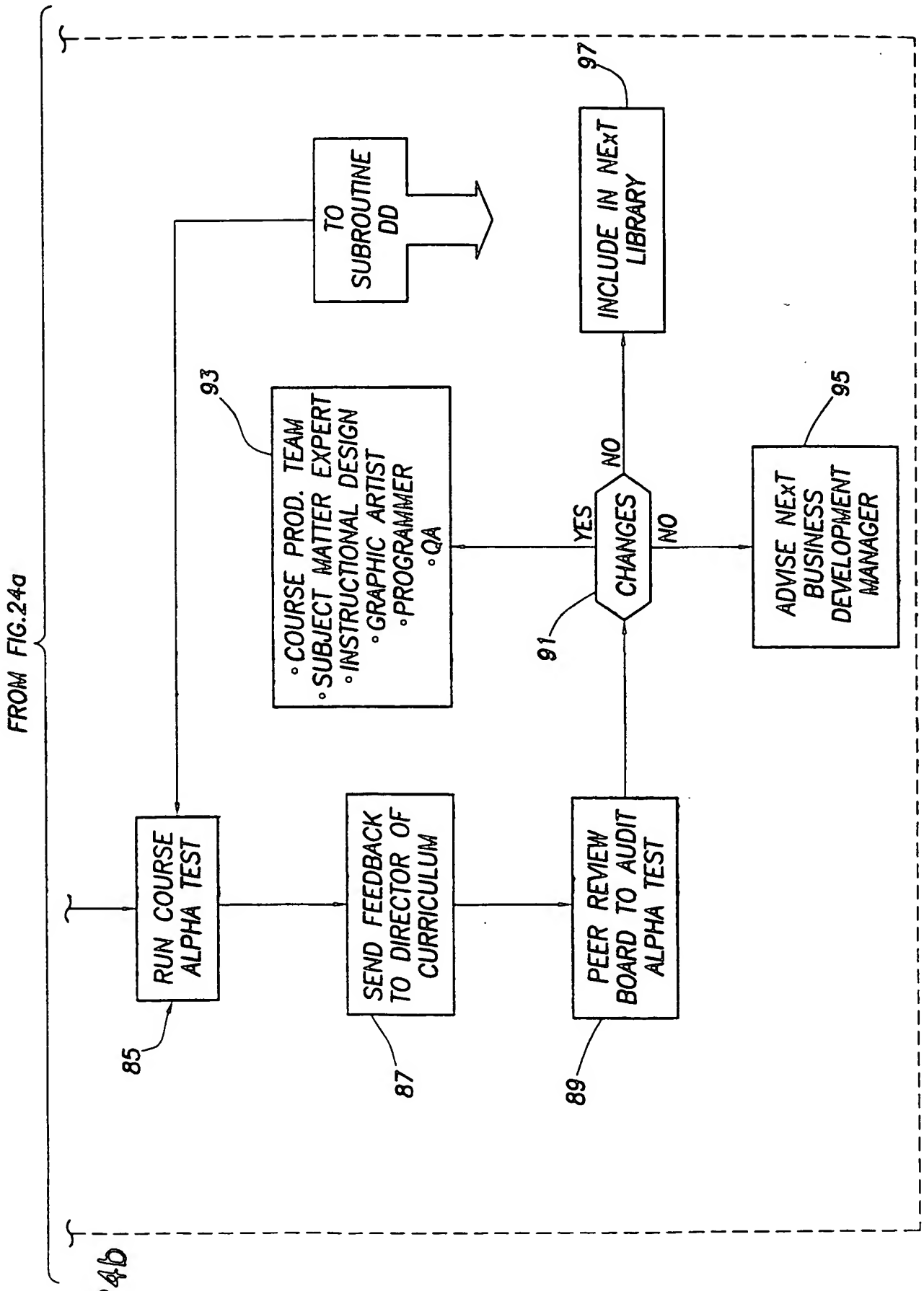
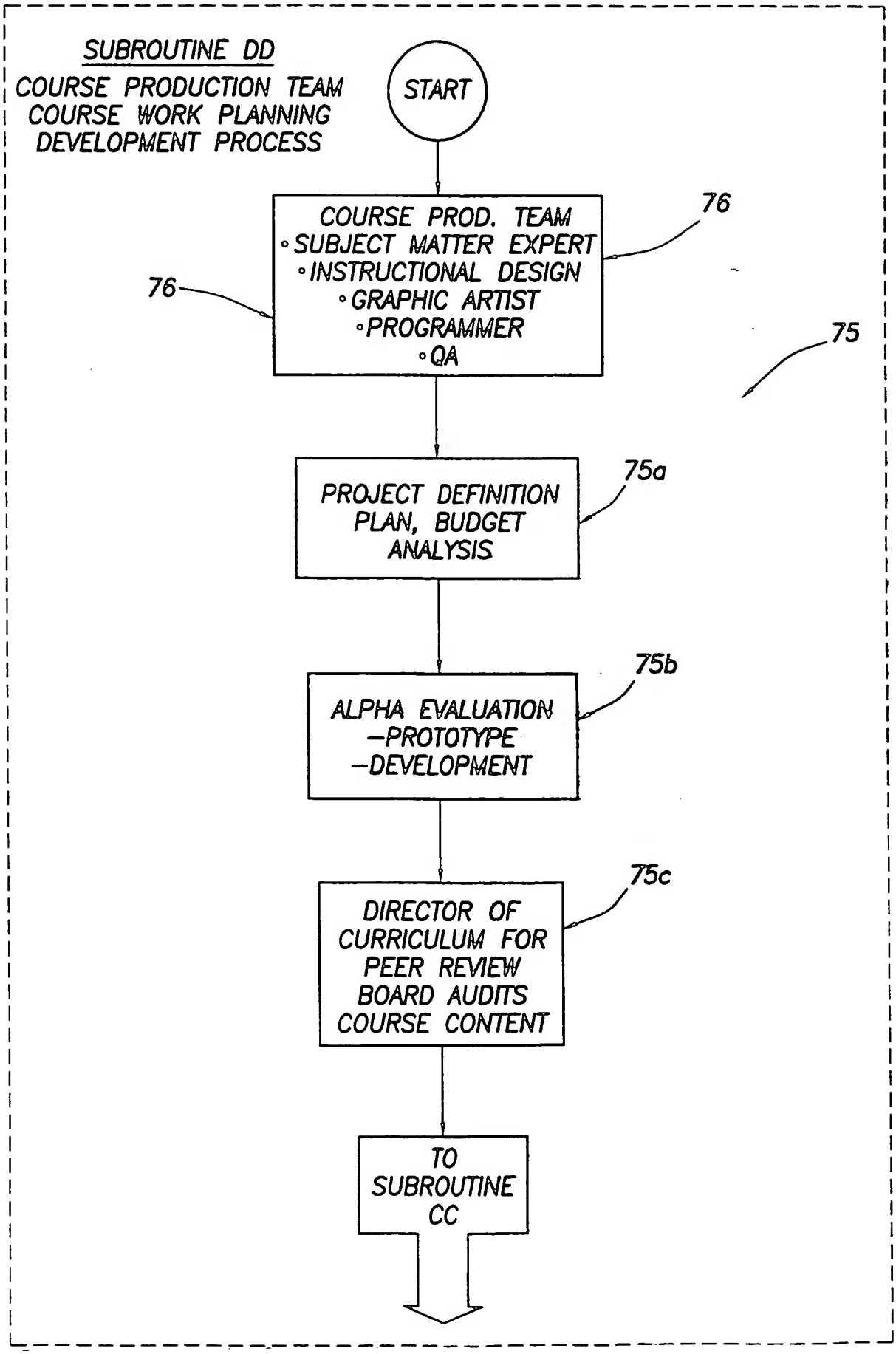

FROM FIG.24a
RUN COURSE ALPHA TEST
85
SEND FEEDBACK TO DIRECTOR OF CURRICULUM
87
PEER REVIEW BOARD TO AUDIT ALPHA TEST
89
CHANGES
91
YES
NO
NO
93
°COURSE PROD. TEAM
°SUBJECT MATTER EXPERT
°INSTRUCTIONAL DESIGN
°GRAPHIC ARTIST
°PROGRAMMER
°QA
TO SUBROUTINE DD
INCLUDE IN NEXT LIBRARY
97
ADVISE NEXT BUSINESS DEVELOPMENT MANAGER
95

FIG.24b

FIG.25


SUBROUTINE DD
COURSE PRODUCTION TEAM
COURSE WORK PLANNING
DEVELOPMENT PROCESS
START
COURSE PROD. TEAM
• SUBJECT MATTER EXPERT
• INSTRUCTIONAL DESIGN
• GRAPHIC ARTIST
• PROGRAMMER
• QA
76
76
75
PROJECT DEFINITION
PLAN, BUDGET
ANALYSIS
75a
ALPHA EVALUATION
–PROTOTYPE
–DEVELOPMENT
75b
DIRECTOR OF
CURRICULUM FOR
PEER REVIEW
BOARD AUDITS
COURSE CONTENT
75c
TO
SUBROUTINE
CC

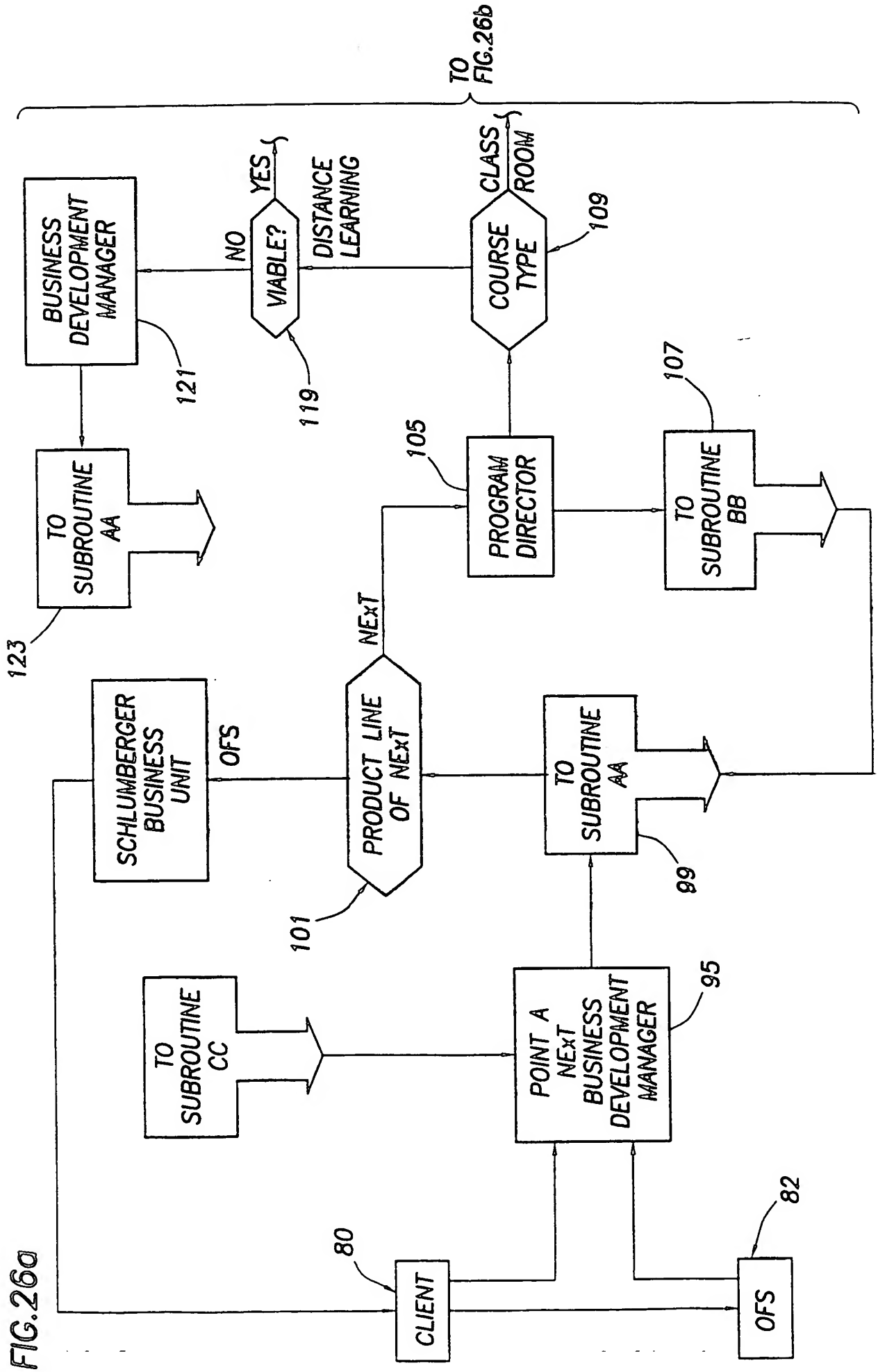

TO FIG.26b
BUSINESS DEVELOPMENT MANAGER
YES
NO
VIABLE?
DISTANCE LEARNING
CLASS ROOM
COURSE TYPE
109
121
119
107
105
TO SUBROUTINE AA
PROGRAM DIRECTOR
TO SUBROUTINE BB
123
NEXT
SCHLUMBERGER BUSINESS UNIT
OFS
PRODUCT LINE OF NEXT
TO SUBROUTINE AA
99
101
TO SUBROUTINE CC
POINT A NEXT BUSINESS DEVELOPMENT MANAGER
95
80
CLIENT
OFS
82

FIG.26a

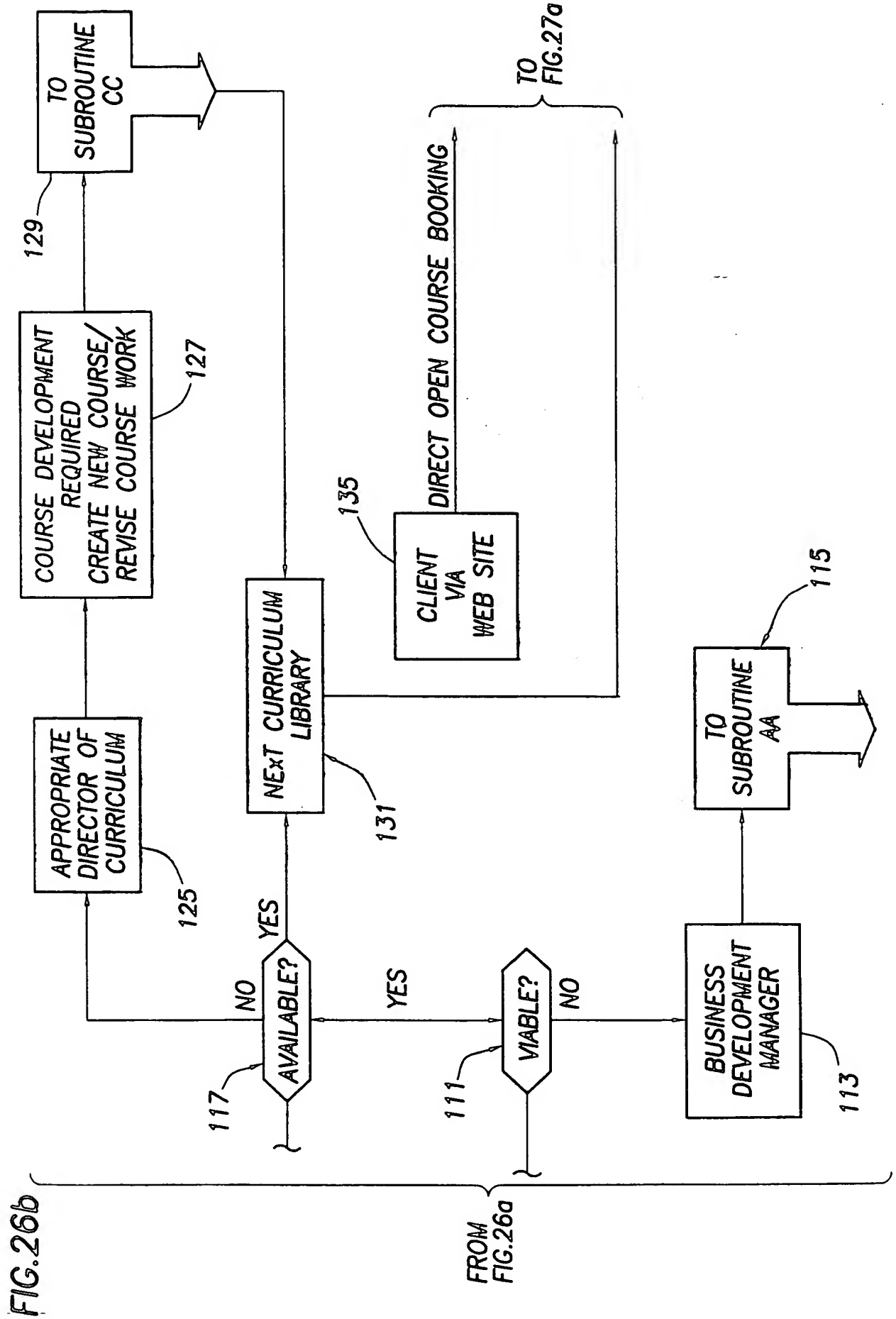

FROM FIG.26a
AVAILABLE?
NO
YES
117
APPROPRIATE DIRECTOR OF CURRICULUM
125
COURSE DEVELOPMENT REQUIRED CREATE NEW COURSE/ REVISE COURSE WORK
127
TO SUBROUTINE CC
129
NEXT CURRICULUM LIBRARY
131
CLIENT VIA WEB SITE
135
DIRECT OPEN COURSE BOOKING
TO FIG.27a
VIABLE?
YES
NO
111
BUSINESS DEVELOPMENT MANAGER
113
TO SUBROUTINE AA
115

FIG.26b

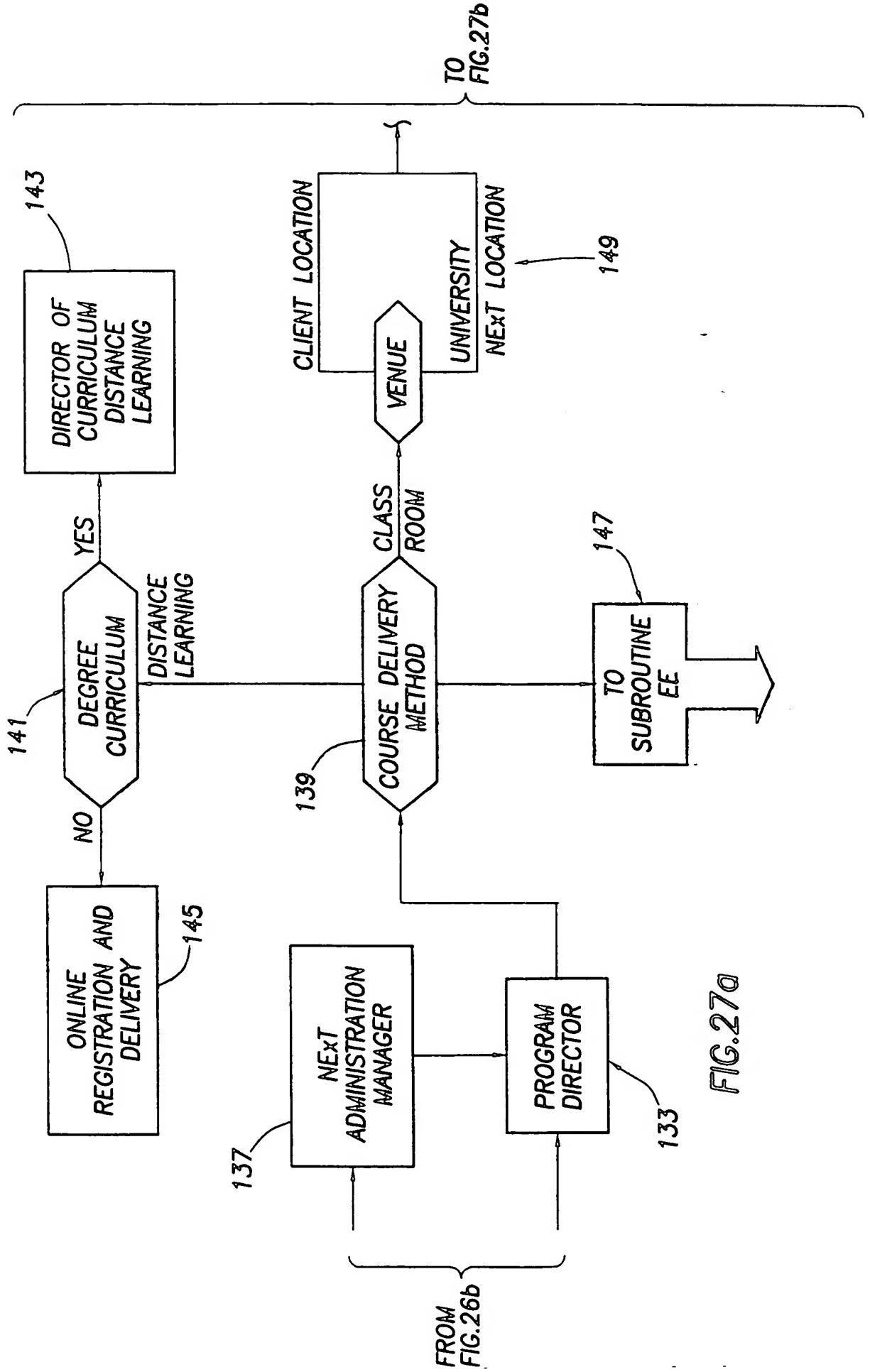

TO FIG.27b
143
DIRECTOR OF CURRICULUM DISTANCE LEARNING
CLIENT LOCATION
VENUE
UNIVERSITY NEXT LOCATION
149
YES
CLASS ROOM
141
DEGREE CURRICULUM
DISTANCE LEARNING
139
COURSE DELIVERY METHOD
147
TO SUBROUTINE EE
NO
ONLINE REGISTRATION AND DELIVERY
145
137
NEXT ADMINISTRATION MANAGER
PROGRAM DIRECTOR
133
FROM FIG.26b

FIG.27a

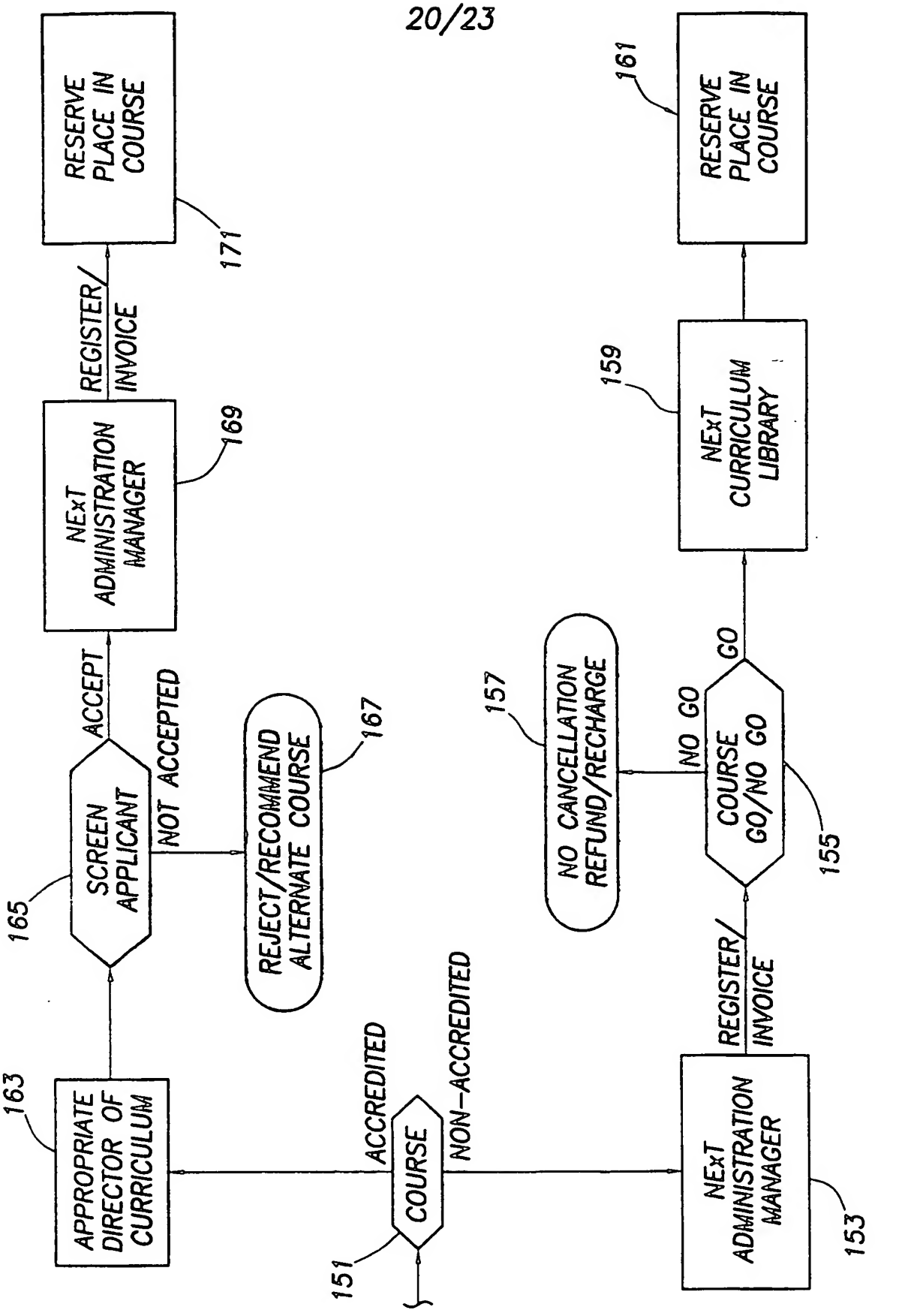
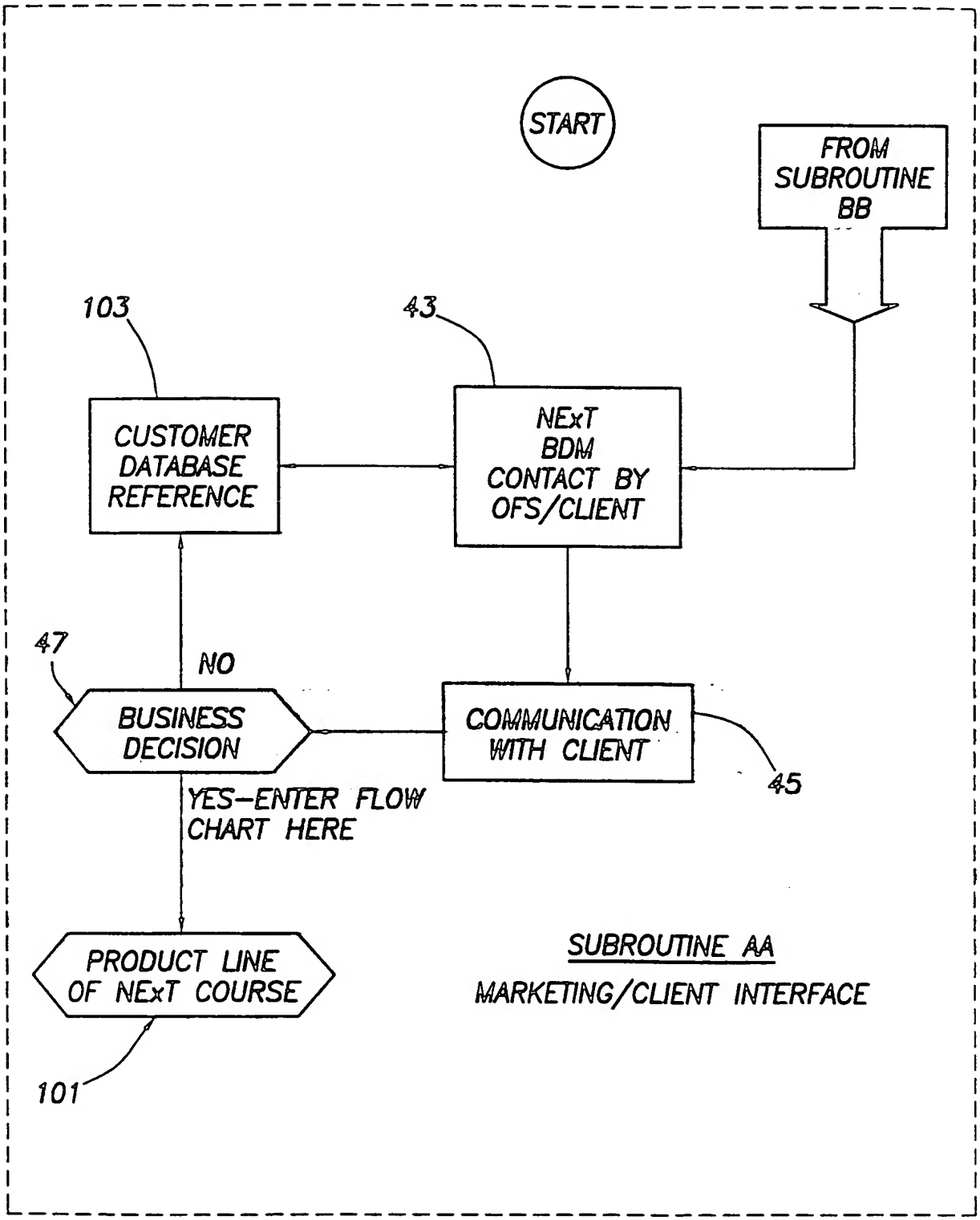

FROM FIG.27a
APPROPRIATE DIRECTOR OF CURRICULUM
163
SCREEN APPLICANT
165
ACCEPT
NOT ACCEPTED
REJECT/RECOMMEND ALTERNATE COURSE
167
NEXT ADMINISTRATION MANAGER
169
REGISTER/ INVOICE
RESERVE PLACE IN COURSE
171
COURSE
151
ACCREDITED
NON-ACCREDITED
NEXT ADMINISTRATION MANAGER
153
REGISTER/ INVOICE
COURSE GO/NO GO
155
NO GO
GO
NO CANCELLATION REFUND/RECHARGE
157
NEXT CURRICULUM LIBRARY
159
RESERVE PLACE IN COURSE
161

FIG.27b

FIG.28


START
FROM SUBROUTINE BB
103
43
CUSTOMER DATABASE REFERENCE
NExT BDM CONTACT BY OFS/CLIENT
47
NO
BUSINESS DECISION
COMMUNICATION WITH CLIENT
45
YES–ENTER FLOW CHART HERE
PRODUCT LINE OF NExT COURSE
101
SUBROUTINE AA
MARKETING/CLIENT INTERFACE

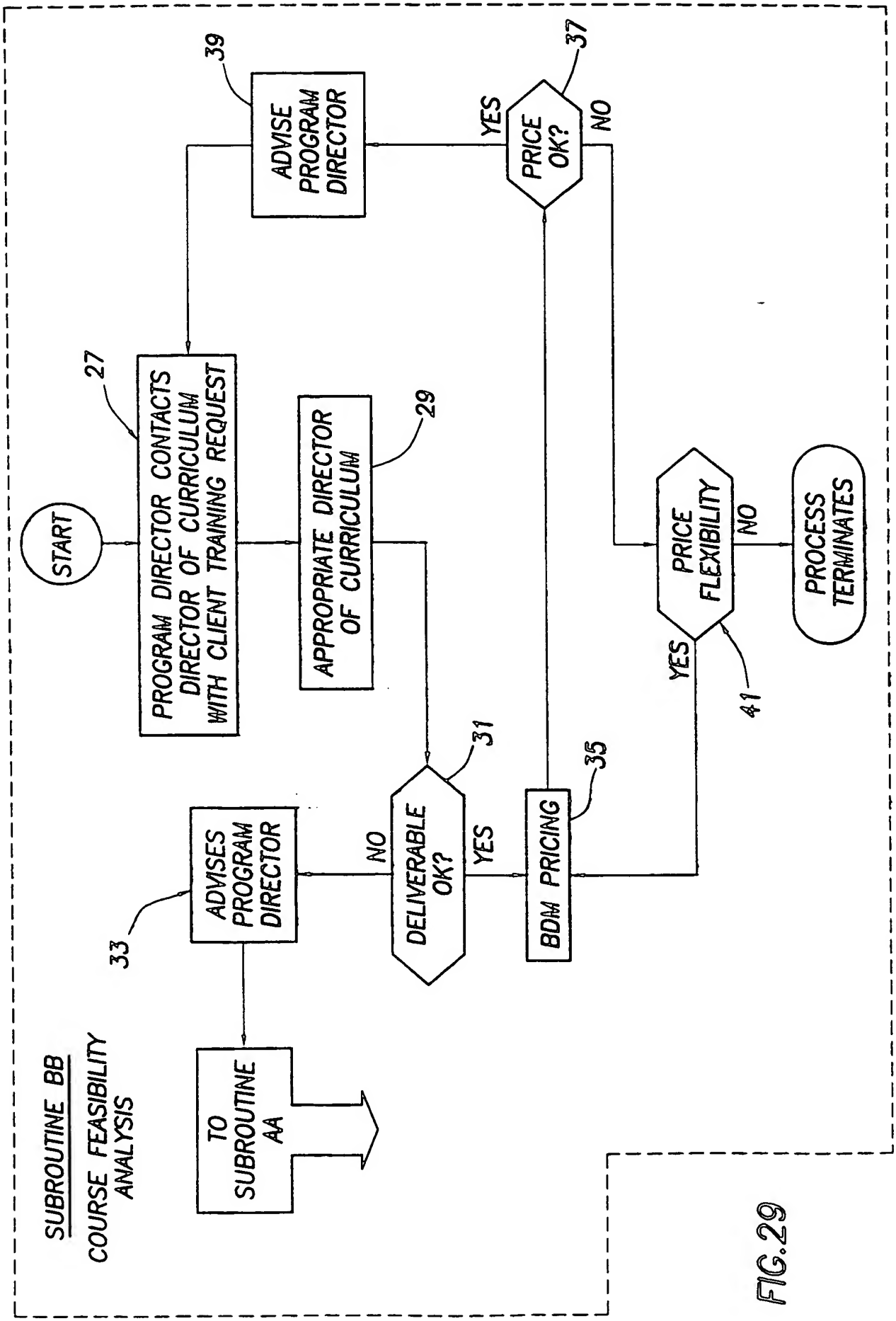

SUBROUTINE BB
COURSE FEASIBILITY ANALYSIS
START
PROGRAM DIRECTOR CONTACTS DIRECTOR OF CURRICULUM WITH CLIENT TRAINING REQUEST
27
APPROPRIATE DIRECTOR OF CURRICULUM
29
DELIVERABLE OK?
31
NO
YES
ADVISES PROGRAM DIRECTOR
33
TO SUBROUTINE AA
BDM PRICING
35
PRICE OK?
37
YES
NO
ADVISE PROGRAM DIRECTOR
39
PRICE FLEXIBILITY
YES
NO
41
PROCESS TERMINATES

FIG.29

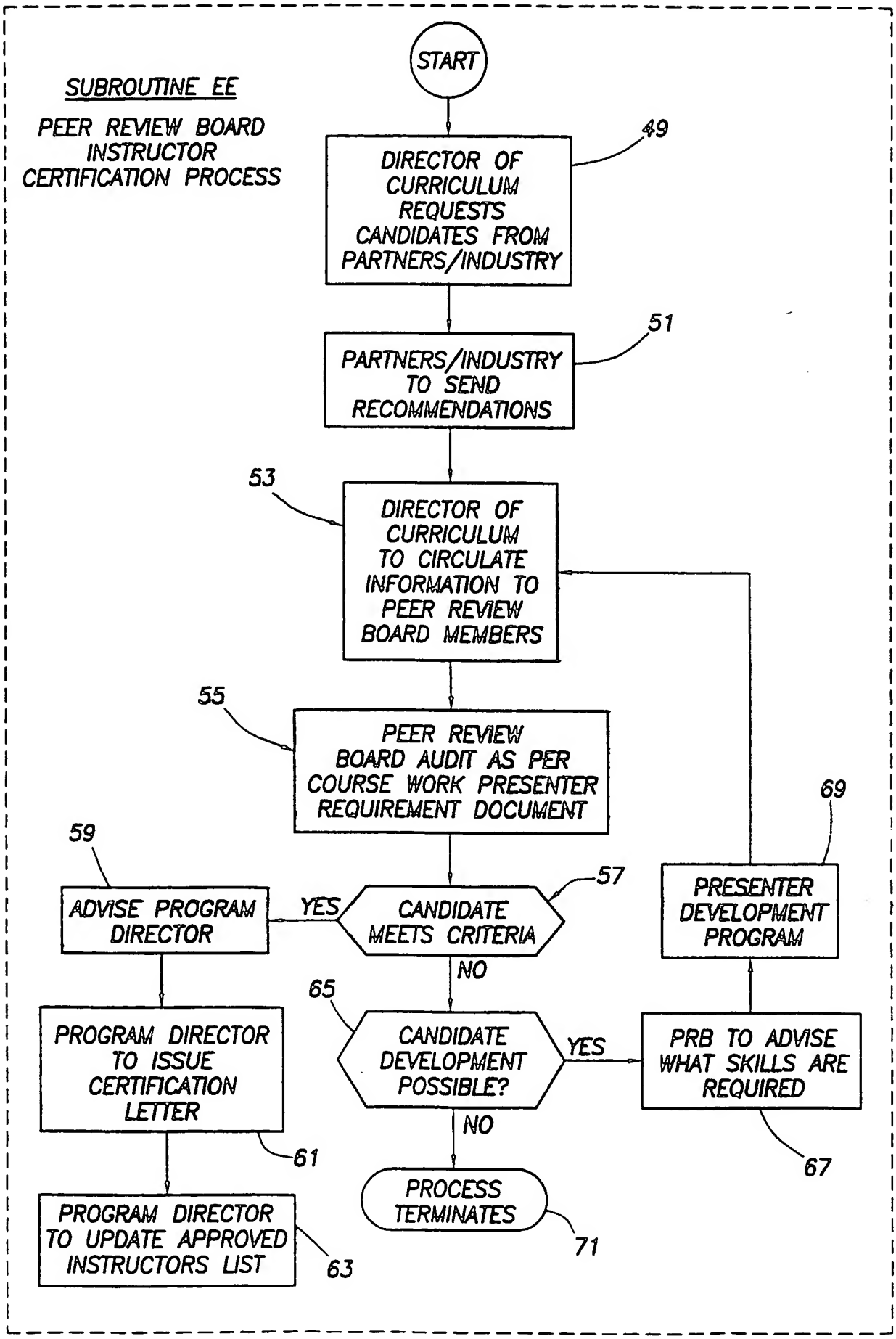

SUBROUTINE EE
PEER REVIEW BOARD INSTRUCTOR CERTIFICATION PROCESS
START
DIRECTOR OF CURRICULUM REQUESTS CANDIDATES FROM PARTNERS/INDUSTRY
49
PARTNERS/INDUSTRY TO SEND RECOMMENDATIONS
51
DIRECTOR OF CURRICULUM TO CIRCULATE INFORMATION TO PEER REVIEW BOARD MEMBERS
53
PEER REVIEW BOARD AUDIT AS PER COURSE WORK PRESENTER REQUIREMENT DOCUMENT
55
CANDIDATE MEETS CRITERIA
57
YES
ADVISE PROGRAM DIRECTOR
59
NO
PRESENTER DEVELOPMENT PROGRAM
69
CANDIDATE DEVELOPMENT POSSIBLE?
65
YES
PRB TO ADVISE WHAT SKILLS ARE REQUIRED
67
NO
PROGRAM DIRECTOR TO ISSUE CERTIFICATION LETTER
61
PROCESS TERMINATES
71
PROGRAM DIRECTOR TO UPDATE APPROVED INSTRUCTORS LIST
63

FIG.30